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Scientific, Technical and Economic Committee for Fisheries (STECF)

REVIEW OF SCIENTIFIC ADVICE FOR 2015 – PART 2 (STECF-14-11)

Edited by

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SCIENTIFIC, TECHNICAL AND ECONOMIC COMMITTEE FOR FISHERIES (STECF)

REVIEW OF SCIENTIFIC ADVICE FOR 2015 Part 2 (STECF-14-11)

THIS REPORT WAS REVIEWED DURING THE PLENARY MEETING HELD IN COPENHAGEN, DENMARK, 7-11 JULY 2014

1 INTRODUCTION

Background

This report represents the STECF review of advice for stocks of interest to the European Union in The North Sea, Skagerrak, Kattegat and eastern English Channel, the Celtic Seas and west of Scotland, the Bay of Biscay and Iberian waters, waters surrounding Iceland and Greenland, the Barents and Norwegian Seas and some widely distributed and migratory stocks and deepwater resources in the northeast Atlantic ocean.

In undertaking the review, STECF has consulted the most recent reports on stock assessments and advice from appropriate scientific advisory bodies or other readily available literature, and has attempted to summarise it in a common format. For some stocks the review remains unchanged from the Consolidated Review of advice for 2014 (STECF 13-27), since no new information on the status of or advice for such stocks was available at the time the present review took place.

STECF notes that for several stocks the ICES advicesheets make the following statement with regard to mixed fisheries: *"Assuming fishing patterns and catchability in 2014 and 2015 are unchanged from those in 2013, Cod and Nephrops in FU6 are the limiting species for 73% and 27% respectively for the fleets in the North Sea demersal fisheries in 2015*". STECF notes that these results are an artefact of the way the model has been formulated. STECF advises that the percentages given in the above statement are erroneous and should not be used for management purposes. The advice above relates to the ICES mixed fisheries conclusions for the fish stocks / Nephrops functional units listed below:

Cod (*Gadus morhua*), in the North Sea (IIa, IIIa Skagerrak, IV and VIId)

Haddock (*Melanogrammus aeglefinus*) in IIa (EU zone), in Sub-area IV (North Sea) and Divisions IIIa (Skagerrak- Kattegat) and VIa (West of Scotland)

Saithe (Pollachius virens) in Divisions IIa (EU zone), IIIa, Subareas IV (North Sea) and VI (West of Scotland).

Plaice (*Pleuronectes platessa*) in Subarea IV (North Sea)

Plaice (*Pleuronectes platessa*) in Division VIId (Eastern English Channel)

Sole (*Solea solea*) in Sub-area IV (North Sea)

Sole (*Solea solea*) in Division VIId (Eastern English Channel)

Turbot (*Psetta maxima*) in the North Sea

Norway lobster (*Nephrops norvegicus*) in Botney Gut (FU 5)

Norway lobster (*Nephrops norvegicus*) in the Farn Deep (FU 6)

Norway lobster (*Nephrops norvegicus*) in Fladen Ground (FU 7) (Division IVa)

Norway lobster (*Nephrops norvegicus*) in Firth of Forth (FU 8)

Norway lobster (*Nephrops norvegicus*) in Moray Firth (FU 9)

Norway lobster (*Nephrops norvegicus*) in the Noup (FU 10)

Norway lobster (*Nephrops norvegicus*) in the Norwegian Deep, FU 32 (Division IVa, East of 2° E + rectangles 43 F5-F7)

Norway lobster (*Nephrops norvegicus*) in Horns Reef (FU 33)

Norway lobster (*Nephrops norvegicus*) Devil's Hole (FU 34)

MSY approach

While recognising that the standard approach to advise catches corresponding to fishing at F_{MSY} should, lead to stock biomasses that on average are capable of delivering MSY, STECF considers that using such a standardised approach may not be wholly appropriate, especially for long-lived, low productivity species. The following comments which relate to the advice for roundnose grenadier in Vb, VI, and VII (Section 9.9.2 of this report) provide an example of where this may be the case but similar arguments may also be appropriate for other stocks.

STECF notes that the ICES advice for roundnose grenadier (in Vb, VI, VII and XIIb) is based on an assessment and catch forecast for the component of the stock in Division Vb, and Subareas VI and VII only. Furthermore, while the mean estimate of biomass for the stock in Vb, VI, VII has increased slightly over the last two years, it remains at only about 30% of the estimated mean level for the beginning of the time-series (1988) and is close to the MSY Btrigger reference point.

Based on ICES' projections, fishing at FMSY implies landings of 3952 t in 2015 and 4019 t in 2016 and will give rise to a small (2%) increase in stock biomass. Such a slow response in biomass to fishing at FMSY implies that the recovery of the stock to BMSY (68,935 t) will take many years (in the order of 20 years), assuming no other changes in the environment or fishery). STECF notes that even with no fishing, the biomass is only predicted to increase by 10% by 2017.

Furthermore, the low landings from Vb, VI and VII observed over the last three years (2011 = 1577 t, 2012 = 2501 t, 2013 = 1498 t; average = 1862 t) have not resulted in any significant increase in stock biomass. STECF notes tht fishing at F_{MSY} potentially implies more than a 2-fold increase in landings in 2015 compared to the average landings over the most recent 3 years. Given the uncertainty in the assessment results, such an increase in landings (and catch), increases the risk that recovery of the stock biomass to levels that will deliver MSY will be impeded. STECF considers that restricting landings in 2015 and 2016 to less than the recent average level of 1862 t would be a more appropriate risk-averse approach and is likely to lead to a more rapid recovery of the stock biomass.

1.1 Terms of Reference

Background

According to Article 2 of Commission Decision 629 of 26 August 2005 establishing a Scientific, Technical and Economic Committee for Fisheries, STECF shall provide annual advice on the situation of fishery resources relevant to the EU. The second part of the stock advice focuses on stocks and associated fisheries in the North Sea, North-Western Waters, South Western Waters, Deep Sea and Widely distributed and migratory stocks.

Terms of reference

The STECF is requested to review and comment on the scientific advice released so far in 2014 in particular for the stocks specified below. The text of previous STECF reviews of stocks for which no updated advice is available shall be retained in the report in order to facilitate easy reference and consultation.

STECF is requested, in particular, to highlight any inconsistencies between the results of it assessment and the advice delivered by scientific advisory committees of ICES and RFMOs.

In addition, when reviewing the scientific advice from ICES, and any associated management recommendations, STECF is requested to take into account Harvest Control Rules adopted in any type of multi-annual management plan and rules and principles for the setting of TACs as specified in the Commission Communication to the Council concerning a consultation on Fishing Opportunities for 2015 (COM(2014) XXX final – see supporting documentation.

ICES has been asked to provide advice option taking into account new regulations concerning landing obligations (Article 15 of CFP); STECF is requested, when reviewing this advice, to also comment on it.

Similarly, for data-limited stocks, ICES has been requested to use the available data, together with basic principles, information from comparable cases and expert knowledge in order to provide the best possible advice on the level of landings, or catches when possible, corresponding to MSY, using quantitative, semi-quantitative or qualitative methods as appropriate. Most of this advice is not expected to change in comparison with last year. As last year, STECF is requested to review this advice on data-limited stocks, in particular those which were re-examined or re-opened by ICES.

- ✓ **<u>Eco-Region 1:</u> North Sea**

    - **DG Mare focal person:** Peter Hopkins, Unit E2
    - Stocks of
        - Anglerfish in ICES Divisions IIIa & Vb , Subareas IV, VI, XII & XIV
        - Brill in the North Sea
        - Cod in ICES Subarea IV, ICES Divisions VIID and IIIa (Skagerrak)
        - Cod in ICES Division IIIa (Kattegat)
        - Dab in the North Sea
        - Flounder in the North Sea
        - Grey Gunard in the North Sea
        - Haddock in ICES Subarea IV and ICES Division IIIa (Skagerrak & Kattegat)
        - Herring in ICES Division IIIa and Subdivisions 22-24 (Western Baltic Spring spawners)
        - Herring in ICES Division IIIa, Subarea IV and Division VIId (North Sea Autumn spawners)
        - Horse Mackerel (*Trachurus trachurus*) in ICES Division IIIa (eastern part), IVb, IVc & VIId
        - Lemon Sole in the North Sea
        - Mackerel in the North Sea
        - Megrim in the North Sea
        - *Nephrops norvegicus* in ICES Division IIIa (Functional Units 3 & 4)
        - *Nephrops norvegicus* in Norwegian Deep (Functional Unit 32
        - *Nephrops norvegicus* in divisions IVa, Noup (Functional Unit 10) and Moray Frith (Functional Unit 9)
        - *Nephrops norvegicus* in ICES Division IVa, Fladen ground (Functional Unit 7)
        - *Nephrops norvegicus* in ICES Division IVb, Firth of Forth (Functional Unit 8) and Farn Deep (Functional Unit 6)
        - *Nephrops norvegicus* in ICES Divisions IVb & IVc, Botney Gut / Silver Pit (Functional Unit 5) and Off Horn Reef (Functional Unit 33)
        - Norway Pout in ICES Subarea IV & ICES Division IIIa (Skagerrak & Kattegat)
        - *Pandalus* stocks
        - Plaice in the ICES Subarea IV
        - Plaice in the ICES Division VIId
        - Plaice in ICES Division IIIa
        - Pollack in the North Sea
        - Rays and skates in the North Sea
        - Red Gunard in the North Sea
        - Red Mullet in the North Sea
        - Saithe in the ICES Subarea IV, ICES Division IIIa and ICES Subarea VI
        - Sandeel in ICES Division IIIa (Skagerrak & Kattegat)
        - Sandeel in ICES Subarea IV
        - Sandeel in the Shetland area
        - Seabass in the North Sea
        - Sole in ICES Division IIIa
        - Sole in ICES Subarea IV
        - Sole in ICES Division VIId
        - Sprat in the North Sea
        - Spurdog

- Turbot in the North Sea
- Whiting in the ICES Subarea IV and ICES Division VIId
- Whiting in ICES Division IIIa
- Witch in the North Sea

✓ **<u>Eco-Region 2:</u> Celtic Sea and West of Scotland**

- **DG Mare focal persons:** Laurent Markovic, Unit C2
- Stocks of
  - Anglerfish (*Lophius piscatorius* & *L. budegassa*) in Divisions VIIb-k, VIIIa & VIIIb
  - Cod in ICES Division VIa
  - Cod in ICES Division VIb
  - Cod in ICES Division VIIa
  - Cod in ICES Divisions VIIb,c,e-k VIII,IX,X,CECAF 34.1.1 (EU)
  - *Galeorhinus galeus* in ICES Subareas VI & VII
  - Greenland Halibut in the Western waters
  - Grey Gurnard in the Western waters
  - Haddock in ICES Division VIa
  - Haddock in ICES Division VIb
  - Haddock in ICES Division VIIa
  - Haddock in ICES Divisions VIIb-k, VIII, IX, X, CECAF 34.1.1 (EU)
  - Northern stock of Hake
  - Herring in ICES Divisions VIIa-South & VIIb-k
  - Herring in ICES Division VIa-North
  - Herring in Celtic Sea and ICES Division VIIj
  - Herring in ICES Division VIIa-North (Irish Sea)
  - Megrims (*Lepidorhombus whiffiagonis* & *L. boscii*) in ICES Divisions VIIb, VIIIc, VIIe-k, VIIIa, VIIIb & VIIId
  - Megrims (*Lepidorhombus whiffiagonis* & *L. boscii*) in ICES Subarea VI
  - *Nephrops norvegicus* in ICES Divisions VIIb, VIIc VIIj & VIIk
  - *Nephrops norvegicus* in ICES Divisions VIIf, VIIg & VIIh (Functional Units 20-22)
  - *Nephrops norvegicus* in ICES Division VIa (Functional Units 11, 12, 13)
  - *Nephrops norvegicus* in Functional Units 14 & 15
  - Norway pout in ICES Division Via
  - Plaice in ICES Division VIIa
  - Plaice in ICES Divisions VIIb & VIIc
  - Plaice in ICES Division VIIe
  - Plaice in ICES Divisions VIIf & VIIg
  - Plaice in ICES Divisions VIIh-k
  - Plaice in ICES Divisions Vb (EU waters), VI, XII, XIV PLE/56-14
  - Pollack in ICES Division VII
  - Pollack in in ICES divisions VI & VII
  - Red Mullet in the Western waters
  - Sandeel in ICES Division VIa
  - *Scyliorhinus canicula* and *Scyliorhinus stellaris* in Subareas VI and VII
  - Seabass in the Western waters
  - Sole in ICES Division VIIa
  - Sole in ICES Divisions VIIb & VIIc

- Sole in ICES Divisions VIId & VIIe
- Sole in ICES Divisions VIIf & VII
- Sole in ICES Divisions VIIh-k
- Sole in ICES divisions Vb(EC), VI, XII, XIV
- Sprat in ICES Divisions VIId & VIIe
- Whiting in ICES Division VIIa
- Whiting in ICES Divisions VIIe-k
- Whiting in ICES Division Via
- Whiting in ICES Division VIb
- Whiting in ICES Division VIII
- Rays and Skates in ICES Subareas VI & VII
- *Other demersal elasmobranches West of Scotland*

✓ **<u>Eco-Region 3:</u> Bay of Biscay and Iberian waters**

- DG Mare focal person: Rodrigo Ataide Dias, Unit C2
- Stocks of
  - Anchovy in ICES Subarea VIII
  - Anchovy in ICES Division IXa
  - Anglerfish (*Lophius piscatorius* & *L. budegassa*) in ICES Divisions VIIIc & IXa
  - *Galeorhinus galeus* in ICES Subareas VIII, IX and X
  - Grey Gurnard in the Bay of Biscay and Iberian waters
  - *Horse Mackerel in CECAF areas (Madeira Island)*
  - *Horse Mackerel in CECAF areas (Canary Islands)*
  - *Horse Mackerel in ICES subarea X (Azores Islands)*
  - Megrim (*Lepidorhombus boscii* & *L. whifiagonis*) in ICES Divisions VIIIc & IXa
  - Norway lobster in ICES division VIIIc
  - Norway lobster in ICES divisions VIIIa, b, d & e
  - Norway lobster in ICES divisions IX and X; CECAF 34.1.1 (EU)
  - Pollack in the Bay of Biscay and Iberian waters
  - Plaice in the Bay of Biscay and Iberian waters
  - Rays and Skates in ICES Subareas VIII & IX
  - Red Gurnard in the Bay of Biscay and Iberian waters
  - Red Mullet in the Bay of Biscay and Iberian waters
  - Sardine in ICES Divisions VIIIc & IXa
  - Saithe in ICES divisions VII, VIII, IX, X, CECAF 34.1.1 (EU)
  - *Scyliorhinus canicula* and *Scyliorhinus stellaris* in Subareas VIII, IX & X
  - Seabass in the Bay of Biscay and Iberian waters
  - Sole in ICES Divisions VIIIa & VIIIb
  - Sole in ICES divisions VIIIc, d & e, IX, X, CECAF 34.1.1 (EU),
  - Southern stock of Hake in ICES Divisions VIIIc & IXa
  - Southern Horse Mackerel (*Trachurus trachurus*) in ICES Division IXa
  - Southern Mackerel component of NEA Mackerel (*Scomber scombrus*)
  - Whiting in the Bay of Biscay and Iberian waters
  - *Other demersal elasmobranches in the Bay of Biscay and Iberian Waters*

✓ **<u>Eco-Region 4:</u> Icelandic and East Greenland**

- **DG Mare focal person:** Frederik Schutyser, Unit C2
- Stocks of
  - Greenland cod
  - Greenland halibut
  - Herring in ICES subareas I & II (Norwegian Spring spawners)
  - Icelandic cod
  - Icelandic haddock
  - Icelandic saithe
  - Icelandic Capelin
  - Icelandic summer spawning herring
  - *Sebastes mentella* in ICES Subareas V, VI, X, XII & XIV, NAFO Subareas I & II
  - *Sebastes mentella*

✓ **<u>Eco-Region 5:</u> The Barents Sea and the Norwegian Sea**

- **DG Mare focal person:** Frederik Schutyser, Unit C2
- Stocks of
  - Capelin
  - Greenland halibut
  - Northeast cod
  - Norwegian coastal cod
  - Northeast Arctic haddock
  - Northeast Arctic saithe
  - *Sebastes marinus* in ICES Subareas I & II
  - *Sebastes mentella* in ICES Subareas I & II
  - Shrimp

✓ **<u>Eco-Region 6:</u> Faeroe plateau ecosystem**

- **DG Mare focal person:** Frederik Schutyser, Unit C2
- Stocks of
  - Cod in ICES Subdivision Vb1
  - Cod in ICES Subdivision Vb2
  - Haddock in ICES Division Vb (including extra catch option requested by Commission – see below)
  - Saithe in ICES Subdivision Vb

✓ **Widely distributed and migratory stocks**

- **DG Mare focal persons:** Frederik Schutyser, Unit C2
- Part 1
  - Stocks of
    - Alfonsinos / Golden eye perch (*Beryx* spp.)

- Black scabbard fish in ICES Divisions Vb, XIIb and Subareas VI and VII
- Black scabbard fish in ICES Subareas VIII and IX
- Black scabbard fish in other areas
- Blue Ling in ICES Division Va & ICES Subarea XIV
- Blue Ling in ICES Division Vb & ICES Subareas VI & VII
- Blue Ling in ICES Subareas I & II, ICES Division IIIa & IVa, ICES Subareas VIII, IX & XII
- *Blue shark (Prionace glauca) in the North-east Atlantic*
- Blue whiting in ICES Subareas I-IX, XII & XIV
- Blue whiting in ICES Subareas IIa
- Blue whiting in ICES Subareas Vb,VI,VII
- Blue whiting in ICES Subareas VIIIabd
- Blue whiting in ICES Subareas VIIIe
- Blue whiting in ICES Subareas VIIIc,IX,X
- Boarfish in ICES divisions VI, VII, VIII (EU)
- *Catsharks and nursehounds (Scyliorhinus canicula and Scyliorhinus stellaris) in the North-east Atlantic*
- Deep-water fish (several species) in IVA, IIIa, Vb, VI, VII, VIII, IX, X and XII.
- European eel
- Forkbeard spp.
- Great silver smelt in ICES Division Va
- Great silver smelt in ICES Subareas I & II, ICES Division IIIa, ICES Subarea IV, ICES Division Vb, ICES Subareas VI, VII, VIII, IX, X, XII & XIV
- *Horse mackerel in ICES Divisions IIa, IVa, Vb, VIa, VIIa-c,e-k and VIIIa-e*
- Kitefin shark in ICES Subareas I-XIV
- Leafscale gulper shark
- Ling in ICES Subareas I & II
- Ling in ICES Division Va
- Ling in ICES Division Vb
- Ling in ICES Divisions IIIa & IVa & ICES Subareas VI, VII, VIII, IX, XII & XIV
- Northeast Atlantic spurdog
- Northeast Atlantic portbeagle
- Northeast Atlantic basking shark
- Northeast Atlantic Mackerel - combined Southern, Western and North Sea spawning components
- Orange roughy
- Portuguese dogfish and leafscale gulper shark in ICES Subareas I-XIV
- *Rays and Skates in the North-east Atlantic*
- Red seabream in ICES Subarea IX
- Red seabream in ICES Subarea X (Azores)
- Red seabream in ICES Subareas VI, VI and VIII
- Roundnose grenadier in ICES Division Vb, Subareas VI & VII, ICES Division XIIb
- Roundnose grenadier in on the Mid-Atlantic ridge
- Roundnose grenadier in ICES Division IIIa
- Roundnose grenadier in all other areas

- *Thresher sharks(Alopias vulpinus & Alopias superciliosus) in the North-east Atlantic*
- *Tope (Galeorhinus galeus) in the North-east Atlantic*
- Tusk in ICES Subareas I & II
- Tusk in ICES Division Va and Subarea XIV
- Tusk in ICES Division IIIa, ICES Subarea IV, ICES Division Vb & VIa & XIIb, ICES Subareas VII, VIII, IX
- Tusk in ICES Division VIb
- Tusk in ICES Subarea XII excluding XIIb

Request for STECF opinion on the offshore cod stock in the Greenland area (ICES subarea XIV and NAFO Subarea 1)

Background

The ICES advice (June 2013) for the offshore cod stock in Greenland (ICES subarea XIV and NAFO subarea 1) indicates that based on precautionary considerations there should be no offshore fishery in 2014 to improve the likelihood of establishing offshore spawning stocks in West and East Greenland. This advice is the same as for 2013.

The government of Greenland established a TAC of 5000t for 2013 and adopted a management plan for 2014 with a TAC of 10000t. The fishery can only take place under exploratory conditions as defined by the plan. These conditions include a closed season and fishing activity is only permitted in the southernmost area of West Greenland and in East Greenland. Also, the plan contains technical measures to distribute the fishing effort between four geographical areas and has a mandatory biological sampling in close collaboration with the Greenlandic Institute of Natural Resources.

Regarding the stock definition, ICES and the Greenlandic Institute of Natural Resources have indicated that based on genetic studies the current stock delimitation might not correspond to the biological spawning populations.

Terms of reference

For the cod stock distributed in Greenland in the offshore area (ICES subarea XIV and NAFO subarea 1) STECF is requested to provide opinion on the management plan adopted by the government of Greenland, including:

- assessment on whether the proposed technical measures (permitting fishing in a limited area) are likely to have any impact on catches and exploitation rate

- assessment on whether the provisions of the plan for data collection are adequate for future scientific purposes to undertake assessments/evaluation of the plan

1.2 Participants

This report was prepared in draft by the STECF Expert Working Group 14-08 at its meeting in Copenhagen from 30 June – 4 July 2014. STECF acknowledges the significant contribution from the following participants:

STECF members

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Raid, Tiit
Zoublas, Tomas
Orio, Alessandro

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Casey, John
Druon, Jean-Noel

2 RESOURCES OF THE NORTH SEA

2.1 Norway lobster (*Nephrops norvegicus*) - IIa (EU zone), IIIa and North Sea (EU zone)

Assessments of the *Nephrops* Functional Units (FUs) of Subarea IV utilized a number of approaches, including Underwater UWTV surveys (UWTV) surveys, length composition information, and basic fishery data such as landings and effort. Owing to uncertainties in the accuracy of historic landings and to inaccurate effort figures in some fisheries, increasing attention is paid to survey information and size composition data as an indicator of stock status. Within SubArea IV, there are TV surveys providing sufficiently long time series of information to apply a quantitative assessment approach in four of the FUs as described in the paragraphs below. The remainder of the FUs are dealt with using a new approach developed by ICES for Nephrops stocks falling into the 'Data Limited Stock' category; this is also described below Since 2011 the *Nephrops* stock in IIIa (FU3&4) has also been assessed on the basis of UWTV data.

In 2009 there were important developments in the methodology to assess the status of *Nephrops* stocks. The use of UWTV surveys has enabled the development of fishery-independent indicators of abundance. STECF (2005) had suggested that a combination of an absolute abundance estimate from an UWTV survey and a harvest rate based on $F_{0.1}$ from a combined sex–length cohort analysis (LCA) and the mean weight and selection pattern from the commercial fishery could be used to calculate appropriate landings. The approach has been further developed and evaluated by ICES workshops in 2007, 2009 and 2010 (ICES 2007, ICES 2009, 2010). The 2009 workshop addressed concerns raised regarding factors which could potentially bias the UWTV survey results. Major sources of bias were quantified for each survey and an overall bias correction factor derived which,

when applied to the estimates of abundance from the UWTV survey allows them to be treated as absolute abundance levels.

In particular the workshop concluded that the UWTV surveys detect the burrows of *Nephrops* considerably smaller than the sizes of those taken by the fishery. Therefore the abundance estimates used to calculate the Harvest Ratios presented in the advice since 2009 include a component of the stock that is too small to be exploited by the fishery. This has resulted in calculated Harvest Ratios appearing to have decreased in the current advice compared to previous estimates of Harvest Ratios. In essence, this is a scaling issue, not a change in exploitation rate. The previous proportion corresponding to fishing at $F_{0.1}$ were in the range of 15–20% whereas the revised values from the benchmark in 2009 are in the range of 8–10%.

At the Nephrops benchmark meeting in February 2013 (ICES, 2013), stocks in FUs 6, 32, and 34 were examined. For FU 6 new maturity estimates were presented along with a more detailed analysis concerning the possibility of sperm limitation in depleted stocks. For FU 32 available data sources were investigated, but the assessment was not changed. For FU 34, a detailed analysis of spatial distribution of the fishing grounds was presented, leading to an improved methodology for UWTV determination of the abundance in this FU.

Because there is a proportion of the stock that is observed by TV surveys that is not available to the gears that catch *Nephrops*, HRs are based on the catch/fishable stock size ratio. STECF agrees with ICES that it is appropriate to estimate HRs on the catch/fishable size ratio. However, using such an approach implies historical HR estimates for each FU that are greater than were previously estimated (when compared to $F_{0.1}$, for example), since previous estimates were based on the catch/total stock size ratio.

MSY approach

There are no precautionary reference points defined for Nephrops. Under the ICES MSY framework, exploitation rates which are likely to generate high long-term yield (and low probability of stock overfishing) have been explored and proposed for each functional unit. Owing to the way Nephrops are assessed, it is not possible to estimate Fmsy directly and hence proxies for Fmsy are determined. Three candidates for Fmsy are F0.1, F35%SpR and Fmax. There may be strong differences in relative exploitation rates between the sexes in many stocks. To account for this, values for each of the candidates have been determined for males, females and the two sexes combined. The appropriate Fmsy candidate has been selected for each Functional Unit independently according to the perception of stock resilience, factors affecting recruitment, population density, knowledge of biological parameters and the nature of the fishery (relative exploitation of the sexes and historical Harvest Rate vs. stock status).

A decision making framework based on the table below was used in the selection of preliminary stock specific Fmsy proxies. These may be modified following further data exploration and analysis. The combined sex Fmsy proxy should be considered appropriate provided that the resulting percentage of virgin spawner per-recruit for males or females does not fall below 20%. In such a case a more conservative sex specific FMSY proxy should be picked over the combined proxy.

		Burrow Density (average numbers/m2)		
		Low	Medium	High
		<0.3	0.3-0.8	>0.8
Observed harvest	> F_{max}	$F_{35\%SpR}$	F_{max}	F_{max}

rate or landings compared to stock status	F_{max} - $F_{0.1}$	$F_{0.1}$	$F_{35\%SpR}$	F_{max}
	< $F_{0.1}$	$F_{0.1}$	$F_{0.1}$	$F_{35\%SpR}$
	Unknown	$F_{0.1}$	$F_{35\%SpR}$	$F_{35\%SpR}$
Stock Size Estimates	Variable	$F_{0.1}$	$F_{0.1}$	$F_{35\%}$
	Stable	$F_{0.1}$	$F_{35\%SpR}$	F_{max}
Knowledge of biological parameters	Poor	$F_{0.1}$	$F_{0.1}$	$F_{35\%SpR}$
	Good	$F_{35\%SpR}$	$F_{35\%SpR}$	F_{max}
History Fishery	Stable spatially and temporally	$F_{35\%SpR}$	$F_{35\%SpR}$	F_{max}
	Sporadic	$F_{0.1}$	$F_{0.1}$	$F_{35\%SpR}$
	Developing	$F_{0.1}$	$F_{35\%SpR}$	$F_{35\%SpR}$

Preliminary MSY B triggers were proposed at the lowest observed UWTV abundance.

STECF notes that the estimated HRs for *Nephrops* FUs imply that in some cases, the most recent harvest rate is significantly higher than F_{msy} (or even F_{max}) and that to set catch limits for 2011 in line with F_{msy} would imply reductions in harvest rate and similar large reductions in fishing opportunities and revenue to the fleets that exploit *Nephrops*. STECF does not have the appropriate data and information to quantify the potential economic effects of such reductions. In addition, given that for most Nephrops FUs for which UWTV survey estimates are available, there does not seem to be any immediate biological risk to the stocks even at recently observed harvest rates, incremental reductions in fishing mortality towards the F_{msy} target would seem appropriate. STECF therefore suggests that fishing opportunities for each FU be set in line with successive annual adjustments in fishing mortality (HR) until F_{msy} is realised.

For most of the Sub Area IV FUs without UWTV surveys, assessment is made on the basis of a new approach developed in 2012, drawing on aspects of the TV survey methodology in order to provide a quantitative estimate of fishing opportunity likely to be compliant with MSY considerations. This approach is based on habitat extent and population characteristics. The physical area of each FU has been determined either through knowledge of the sediment type, or from the fishery itself (e.g. VMS positions). Estimates of total abundance are calculated by taking the physical area and multiplying by potential values of Nephrops density which are drawn either from neighbouring FUs with existing TV surveys or from preliminary TV surveys of the specific FU. The numbers removed corresponding to the average (10 years) and maximum observed landings were estimated using mean weights and appropriate discard rates. Finally, the harvest rates for these removal numbers were calculated for each of the possible density values and these are laid down in a table and example of which is provided:

Basis: Surface area FU 5: 1850 km2, Mean weight: 25.6 grams, Discards: 25% in number

	Range of potential density (*Nephrops* per m^2)

Basis	landings	0.05	0.1	0.2	0.3	0.4	0.5	0.6	0.7*	0.8
0.5 * Average landings	500	26.4 %	13.2 %	6.6%	4.4%	3.3 %	2.6 %	2.2 %	**1.9 %**	1.6 %
Average landings (last 10 yrs)	1000	52.8 %	26.4 %	13.2 %	8.8%	6.6 %	5.3 %	4.4 %	**3.8 %**	3.3 %
Maximum historic landings	1400	73.9 %	37.0 %	18.5 %	12.3 %	9.2 %	7.4 %	6.2 %	**5.3 %**	4.6 %

Shaded areas indicate Harvest Rates > range of North Sea FMSY proxies of 8 % - 16%

* Most recent density estimate (preliminary TV survey results)

In order to give advice, average landings of the last 10 years are considered together with the relevant densities in the area (gathered through preliminary surveys or assumed based on neighbouring FUs). The resulting harvest rate is compared to Harvest rates commensurate with FMSY for North Sea Nephrops stocks, which are in the region 8% (FU6) to 16.3% (FU 8), at average 12.3%. Based on this table and these reference points, if in any FU average landings result in a harvest rate below the minimum FMSY harvest rate calculated for the North Sea, this is considered a precautionary state and advice is given on the basis of landings at the average of the last 10 years. Where the harvest rate resulting from the average landings are higher or concerns over state state exist for other reasons, additional precautionary reductions are considered.

ICES points out that this is approach is likely to develop further in future years as new information becomes available.

This approach applies to FU 5, FU10, FU 32, FU 33 and FU34. Advice sheets have been provided by ICES for these FUs and are updated with the new methodology providing individual FU catch advice for the first time.

***Nephrops* Functional Units in III a and the North Sea**

Norway lobster (*Nephrops*) in the North sea (IV) and Skagerrak-Kattegat (IIIa) is assessed in a number of different stock functional units (FU) treated as separate stocks, see below. However, for management purposes the North Sea is partitioned into 2 units only: The EU EEZ and Norwegian EEZ, each of which is treated as a single unit.

FU 3&4 Skagerrak and Kattegat EU EEZ & Norwegian EEZ

FU 5 Botney Gut EU EEZ

FU 6 Farn Deep “

FU 7 Fladen ground “

FU 8 Firth of Forth “

FU 9: Moray Firth EU EEZ

FU 10: Noup “

FU 32 Norwegian Deep Norwegian EEZ

FU 33 Horn’s Reef EU EEZ

FU 34 Devil’s Hole EU EEZ

The *Nephrops* in FU 3 & 4 as well as *Nephrops* in FU 32 (Norwegian EEZ) are managed as separate units, but otherwise the situation is complicated in the EU EEZ in the North Sea, where the specific biological advice for the different FUs is not applied because management operates for the (single) EU EEZ of the North Sea. A consequence of this approach is that in the EU EEZ catches can be taken anywhere, and this could imply inappropriate harvest rates (HRs) from some parts. More important, vessels are free to move between grounds, which allow effort to develop on some grounds in a largely uncontrolled way. Management at the FU level could provide the controls to ensure that catch opportunities and effort are compatible and in line with the scale of the resources in each of the stocks defined by the Functional Units. Note that advice for 2013 based on 2012 assessments is provided for all FUs (including those covered by TV surveys and those by the new data limited approach

It is important to note that overall landings from Subarea IV (around 11000 in 2013 – a decrease of more than 50% since 2009) include small amounts from ICES rectangles which are not included in the main FUs for which individual advice sheets are provided. Average landings for rectangles outside Functional Units since 2010 when the Devil's Hole was split off have been around 400 tonnes, STECF agrees with ICES that this could form the basis of a 2013 landing for these areas.

STECF notes that in the North Sea (which comprises nine *Nephrops* Functional Units (FUs), eight of which are in the EU EEZ) the present aggregated management approach (overall TAC for all FUs) runs the risk of unbalanced effort distribution. Adoption of management initiatives to ensure that effort can be appropriately controlled in smaller areas within the overall TAC area is recommended. If management continues to operate an overall TAC for the area, this can be obtained from the sum of the advice for the individual FUs in the EU EEZ

It should be noted, however, that despite the provision of a Total North Sea TAC, STECF still **recommends** that *Nephrops* FUs should be managed separately.

Mixed-fisheries advice

All the *Nephrops* fisheries in the North Sea area can be considered as mixed fisheries where cod is a major (by-) catch component.

STECF comments on mixed fisheries advice for the North Sea: STECF notes that apart from the 'Maximum" scenario, all mixed fisheries advices for the Functional Units are lower that the single advice by FU.

Nephrops in Subarea IV: Landings of *Nephrops* according to single-stock advice and under different mixed-fisheries scenarios (ICES, 2014). Landings in thousand tonnes .

	Moray Firth	Noup	Fladen Ground	Norwegian Deeps	Farn Deeps	Firth of Forth	Botney Gut – Silver Pit	Off Horn's Reef	Devil's Hole	Other rectangles [2)]
FU	9	10	7	32	6	8	5	33	34	
*Single-stock advice**	< 1.185	< 0.032	< 10.759	< 0.625	< 0.983	< 1.769	< 1.043	< 1.136	< 0.383	< 0.409
Mixed-fisheries scenarios										
Maximum	2.215	0.064	10.758	1.247	11.215	5.234	2.082	2.267	0.764	0.816
Minimum	0.205	0.006	0.867	0.108	0.999	0.484	0.181	0.197	0.066	0.071
Cod MP	0.363	0.010	1.572	0.197	1.819	0.881	0.328	0.357	0.120	0.129
SQ effort	0.684	0.019	2.961	0.370	3.425	1.660	0.618	0.673	0.227	0.242
Effort	0.216	0.006	0.904	0.124	1.252	0.552	0.207	0.225	0.076	0.081

*Advised landings no more than the indicated value.

Mixed fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

2.1.1 Norway lobster (*Nephrops norvegicus*) in Skagerrak & Kattegat (IIIa).

FISHERIES: Historically, two Functional Units in this Management Area: a) Skagerrak (FU 3) and b) Kattegat (FU 4) have been distinguished. However, the distribution of Nephrops is continuous from southern Kattegat into Skagerrak, and exchange of recruits between the southern and northern areas is very likely. ICES therefore recommends that these two FUs are treated as one single FU. The majority of landings are made by Denmark and Sweden, with Norway contributing only small landings from the Skagerrak. In more recent years minor landings have been taken by Germany. During the last 15 years, landings from IIIa varied between 3,000 t and 5,000 t. Peak landings of 5123 were recorded in 2010. Since then landings have decreased. In 2012 landings were 4429 t and in 2013 3760 t. Total discards in 2013 were estimated to around 4010 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2014 is based on combined Danish and Swedish UWTV survey data for 2011, 2012 and 2013.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Undefined.	
	$F_{MSY} = F_{max}$	Harvest ratio 7.9%.	Equivalent to F_{max} combined sex.
Precautionary Approach	Not defined.		

(last changed in 2012)

Harvest ratios as proxy for F_{MSY} for Division IIIa from length cohort analysis 2011 (2008–2010):

	Male	Female	Combined
F_{max}	6.8 %	10.0 %	7.9 %
$F_{0.1}$	4.9 %	7.6 %	5.6 %
$F_{35\%SPR}$	8.1 %	12.9 %	10.5 %

STOCK STATUS:

Fishing pressure				
	2011	**2012**	**2013**	
MSY (F_{MSY})	✓	✗	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined
Stock size				

	2011	2012	2013	
MSY ($B_{trigger}$)	?	?	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	?	?	Unknown
Qualitative evaluation	→	→	→	Stable

Estimates of absolute abundance, available for 2011, 2012 and 2013 from an underwater TV (UWTV) survey for the whole area are considered to be stable. The estimated harvest ratios suggest that the stock is exploited sustainably.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 10 290 tonnes in 2015. If total discard rates do not change from the average of the last three years (2011–2013), this implies total landings of no more than 5 318 tonnes. Note that catches include discards expected to survive the discarding process – assumed to be 25% of the total number discarded for this stock.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the ICES advice for 2015 is based on the MSY approach (FMSY). With regards to the introduction of a discard ban in the Skagerrak STECF notes that 1) the locally-agreed minimum landing size for Nephrops in IIIa is 40 mm CL, whereas the legal minimum in EU waters is only 25 mm CL, 2) that of the estimated total discards, 25% are assumed to survive.

2.1.2 Norway lobster (*Nephrops norvegicus*) in Botney Gut (FU 5).

FISHERIES: Landings from Botney Gut were 1050 t in 2013, a 15% decrease from 2012 landings. Up to 1995, the Belgian fleet used to take over 75% of the international landings from this stock, but since then, its share has dropped to less than 6%. Long-term effort of the Belgian *Nephrops* fleet has shown an almost continuous decrease since the all-time high in the early 1990s. In 2012 and 2013 around 75% of the total international landings were taken by Dutch and UK trawlers. STECF notices that there has been a considerable increase in UK landings from this FU in the same period as the landings from Farn Deep (FU6) has decreased.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Information on this FU is considered inadequate for analytical assessments and it is classified as a data limited stock. No reference points have been defined. The perception of the stock is now based preliminary stock surveys indicating relatively high densities. However, in the absence of a full analytical assessment, ICES bases its advice for this *Nephrops* FU on of its approach to data-limited stocks.

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✓	Below possible reference points

Stock size		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✓	Above poss. reference points

The state of this stock is unknown. Preliminary stock surveys (2010 and 2012) indicate relatively high density compared to neighbouring FUs, which, when compared to estimated landing numbers, imply harvest rates considerably below those associated with MSY for other North Sea Nephrops stocks.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of ICES approach to data-limited stocks that catches should be no more than 1159 t. If discard rates do not change from the assumed rate of 25%, this implies landings of no more than 1043 t. To protect the stock in this functional unit, management should be implemented at the functional unit level.

Other considerations

ICES approach to data-limited stocks

For this stock, average landings of 1043 t in the last ten years correspond to a potential harvest rate of 2.4%, based on the most recent density estimate (preliminary TV survey results) of 0.7 Nephrops per m2. This is considered below the range of MSY harvest rates in the North Sea (between 8% and 16%), which is considered conservative.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.1.3 Norway lobster (*Nephrops norvegicus*) in the Farn Deep (FU 6)

FISHERIES: Nephrops in FU 6 are predominantly caught in trawl fisheries using meshes in the 80–99 mm category. A small amount of creeling takes place. Increases in the numbers of vessels using twin-rig and multi-rig gears observed in this area are likely to have increased the effective fishing power per kW hour. Total landings from the Farn have increased from 2072 t in 2011 to 2982 t in 2013, The UK fleet has accounted for virtually all landings from the Farn Deeps. Estimated discarding has fluctuated around 27% by weight in recent years.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based UWTV surveys of absolute abundance. New size-at-maturity data were analyzed at the 2013 benchmark meeting, leading to revisions in the harvest rate reference points.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	858 million	UWTV survey index at start of current decline (2007) as measured by a geostatistical method.
Approach	F_{MSY}	Harvest rate 8.1%.	Equivalent to $F_{35\%SPR}$ males in 2011.
Precautionary	$F_{0.1}$	Not agreed.	
Approach	F_{max}	Not agreed.	

(last changed in 2013)

Harvest rate reference points, 2013 revisions

	Male	Female	Combined
F_{max}	11.6 %	21.6 %	15.3 %
$F_{0.1}$	7.1%	14.0 %	8.7 %
$F_{35\%SPR}$	8.1 %	15.2 %	11.1 %

For this functional unit (FU), the exploitation rate on males is usually considerably higher than on females and there is evidence of sperm-limitation following harvest rates in the region of 20%. There is evidence to suggest that in both 2006 and 2010 mature females have not been able to successfully mate and therefore a larger male spawning potential is desirable. To this effect the harvest rate equivalent to fishing at F35%SPR for males is suggested as a proxy for FMSY (F35%SPR, males = 8.1%). New size-at-maturity data were analyzed at the 2013 benchmark meeting, leading to revisions in the harvest rate reference points.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

The UWTV survey indicates that the stock size has declined since 2005 and has been fluctuating near MSY Btrigger since 2007. Harvest rates have been above FMSY for all years except 2008.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that if no discard ban is in place in 2015, landings should be no more than 983 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and that a fixed proportion of discards survive. In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach

Following the ICES MSY approach implies a harvest rate of 6.7% (below FMSY because biomass is below MSY Btrigger: FMSY × (SSB2015/MSY Btrigger = 8.1 × (706/858). Considering that no discard ban is in place in 2015, this results in landings of no more than 983 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and assuming a discard survival of 15%.

Additional considerations

In mixed fisheries projections the 'min' scenario (where fishing is assumed to stop when the catch for any one of the stocks considered meets the single-stock advice) estimates that the *Nephrops* stock in FU 6 is one of the main limiting species for 2015, together with cod.

Declines in abundance in other FUs (i.e. Firth of Forth and the Fladen grounds) may increase the risk of higher effort being deployed in this FU which would be inadvisable, given the current low level of the stock.

The stock has shown signs of overexploitation in recent years, with an unbalanced sex ratio leading to poor recruitment. Without suitable controls on the movement of effort between functional units there is nothing to prevent the effort in 2015 from increasing and moving the observed harvest ratios even further beyond the level of F_{MSY}.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that to comply with MSY objectives landings should be no greater than 983 tonnes and catches of no more than 1118 tonnes.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.1.4 Norway lobster (*Nephrops norvegicus*) in Fladen Ground (FU 7) (Division IVa)

FISHERIES: There is only one Functional Unit in this area: FU 7 (Fladen Ground). Small quantities of landings are taken outside the main Fladen Ground Functional Unit. The fleet fishing the Fladen Ground for *Nephrops* comprises approximately 100 trawlers, which are predominantly Scottish (> 97%), based along the Scottish NE coast. In 2010 total landings were around 13000 t but have declined sharply since then to around 3000 t in 2013. In recent years some vessels that traditionally fish the Fladen moved more frequently to other grounds in the North Sea and West coast of Scotland. U.K (Scotland) accounts for around 98 %, the remaining part being Danish. Discarding rates seem to have decreased in recent years to around 2% by number.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based UWTV surveys of absolute abundance.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	2767 million individuals.	Lowest observed UWTV survey estimate of abundance (1992–2010).
Approach	F_{MSY}	Harvest rate 10.3%.	Equivalent to $F_{0.1}$ combined sex in 2011. *F_{MSY} proxy based on length-based Y/R.*
Precautionary Approach	Not defined.		

Harvest rate reference points, 2011

	Male	Female	Combined
F_{max}	16.2%	24.1%	18.5%
$F_{0.1}$	9.5%	12.1%	10.3%
$F_{35\%}$	11.4%	14.4%	12.4%

STOCK STATUS:

Fishing pressure

	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

The stock has declined from the highest observed value in 2008 and is now just below the MSY Btrigger. The harvest rate has declined in recent years, and fell to approximately 3% in 2013 which is well below FMSY.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that catches should be no more than 10 759 t. All catches are assumed to be landed.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level. Should the catch in this FU be lower that advised, the difference should not be transferred to other FUs.

Other considerations

MSY approach

Following the ICES MSY approach implies a harvest rate at FMSY = 10.3%. If no discard ban is in place in 2015, this results in catches of no more than 10 759 t. The discard rate in Fladen in the last three years has been 0%.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that discarding of Nephrops in the 3 recent years has been negligible and that the catch advice for 2015 assumes no discarding.

2.1.5 Norway lobster (*Nephrops norvegicus*) in Firth of Forth (FU 8)

FISHERIES: Landings from the Firth of Forth fishery are predominantly reported from Scotland, with very small contributions from England. The area is periodically visited by vessels from other parts of the UK. During the years 2007-09 annual landings were around 2500 t, but declined to around 2000 t in 2010-12. In 2013 landings decreased to around 1500 t. Nephrops discard rates are higher than in a number of other areas but the rates have declined to 25% by number and 14% by weight (average 2011–2013).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based UWTV surveys of absolute abundance. The FMSY proxy harvest rate values were updated in 2011 on the basis of per-recruit analysis, based on input parameters from a combined-sex length cohort analysis of 2008–2010 catch-at-length data.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***

MSY Approach	MSY $B_{trigger}$	292 million individuals.	Lowest observed UWTV survey estimate of abundance (1993-2010).
	F_{MSY}	Harvest rate 16.3%.	Equivalent to F_{max} combined sex in 2011. F_{msy} proxy based on length-based Y/R
Precautionary Approach	Not defined.		

Harvest rate reference points, 2011

	Male	Female	Combined
F_{max}	12.7 %	26.7 %	16.3 %
$F_{0.1}$	7.7 %	15.2 %	9.4 %
$F_{35\%}$	9.4 %	18.3 %	12.7 %

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

The stock size is well above the MSY Btrigger level. The harvest rate decreased in 2013 to 15.6% and is now below FMSY.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that if no discard ban is in place in 2015, landings should be no more than 1769 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and a fixed proportion of discards survive. In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach

Following the ICES MSY approach implies a harvest rate at FMSY = 16.3%. Considering that no discard ban is in place in 2015, this results in landings of no more than 1769 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and a discard survival rate of 25%.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.1.6 Norway lobster (*Nephrops norvegicus*) in Moray Firth (FU 9)

FISHERIES: Landings from this fishery are predominantly reported from Scotland, with very small contributions from England in the mid-1990s, but not recently. About three quarters of the landings are made by single-rig trawlers, a high proportion of which use a 70-mm mesh. In 1999, twin-rig vessels predominantly used a 100 mm mesh, with 90% of the twin-rig landings made using this mesh size. Legislative changes in 2000 permitted the use of an 80 mm mesh. Total estimated landings in 2013 were 655 t, a decrease of 24% compared to 2012 landings.

Discarding rates averaged over the period 2006–2012 for this stock were about 10% by number. This represents a reduction in discarding rate compared to the average for the period 2000–2005. This may arise from the increasing use of larger mesh sizes in the northern North Sea, although reduction in recruitment may also account for this change.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based UWTV surveys of absolute abundance. The FMSY proxy harvest rate values were updated in 2011 on the basis of per-recruit analysis, based on input parameters from a combined-sex length cohort analysis of 2008–2010 catch-at-length data.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	262 million individuals.	Lowest observed UWTV survey estimate of abundance (1993-2010).
Approach	F_{MSY}	Harvest rate 11.8%.	Proxy, equivalent to $F_{35\%SPR}$ combined sex in 2011. F_{MSY} proxy based on length-based Y/R
Precautionary Approach	Not defined.		

Harvest rate reference points, 2011

	Male	Female	Combined
F_{max}	12.3 %	23.8 %	14.9 %
$F_{0.1}$	7.2 %	11.6 %	7.8 %
$F_{35\%}$	9.1 %	17.1 %	11.8 %

STOCK STATUS:

	Fishing pressure		
	2011 2012	**2013**	
MSY (F_{MSY})	✗ ✗	✓	Below target

Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

	Stock size			
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

The stock declined in 2007–2012 but increased again in 2013. The harvest rate decreased in 2013 to 5.8% and is now below FMSY.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that if no discard ban is in place in 2015, landings should be no more than 1185 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and that a fixed proportion of discards survive.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach

Following the ICES MSY approach implies a harvest rate at FMSY = 11.8%. Considering that no discard ban is in place in 2015, this results in landings of no more than 1185 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and a discard survival rate of 25%.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.1.7 Norway lobster (*Nephrops norvegicus*) in the Noup (FU 10)

FISHERIES: Landings from this fishery are predominantly reported from Scotland. Total landings declined from 173 t in 2008 to a low of 38 t in 2010. Recently the Nephrops fishery at the Noup is prosecuted by only a few vessels that visit the ground at times and landings are less than 1% of the North Sea total. Most Nephrops landings from Noup were made by TR1 vessels targeting whitefish. Total landings in 2013 are estimated to around 20 t. There is no discard information for this fishery.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a calculation of potential landing options and harvest rates, given the known surface area of *Nephrops* habitat and assumed densities of the functional unit. In the absence of a full analytical assessment, ICES bases its advice for this Nephrops FU on of its approach to data-limited stocks.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure
	2011–2013

MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✓	Below possible reference points

Stock size		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

The state of the stock is unknown.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the ICES approach for data-limited stocks that catches should be no more than 33 t. If discard rates do not change from the assumed rate of 7.9%, this implies landings of no more than 32 t.

To protect the stock in this functional unit (FU), management should be implemented at the functional unit level.

Other considerations

ICES approach to data-limited stocks

For this stock, average catches of 111 t for the last ten years corresponds to a potential harvest rate of 12.2%, based on the 2007 density estimate of 0.1 Nephrops per m^2. This is considered within the range of MSY harvest rates in the North Sea (between 8% and 16%). Furthermore, as the density estimate is five years old and landings per unit effort have declined significantly since 2007, there is concern that the burrow density has declined since 2007 and the harvest rate may consequently be higher. For this reason it is not recommended to use the average landings of the last ten years as the basis for advice.

Recent average catches of the last three years correspond to a potential harvest rate of 3.7%. This is considered below the range of MSY harvest rates in the North Sea (between 8%–16%), which is considered conservative. Considering that no discard ban is in place in 2015, this results in landings of no more than 32 t, assuming that discard rates do not change from the average of the last three years (2011–2013) and that the discard mortality rate is 100%.

STECF COMMENTS: STECF agrees with ICES, that the state of the stock is unknown and the advice for 2015 and 2016.

2.1.8 Norway lobster (*Nephrops norvegicus*) in the Norwegian Deep, FU 32 (Division IVa, East of 2° E + rectangles 43 F5-F7).

FISHERIES: Landings from this area have declined steadily since 2005. In 2005 landings were 1089 t, in 2013 landings were only 191 t. Peak landings of around 1200 t were recorded in 2002. Until 2008 more than 80% of the landings from this FU were taken by Denmark, but since 2009 this percentage has decreased. Danish landings come from trawls, whereas a considerable part of the Norwegian landings are from creels. The decline in total landings is due to substantial decreases in Danish effort for *Nephrops* in the Norwegian Deep.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. In the absence of a full analytical assessment, ICES bases its advice for this Nephrops FU on of its approach to data-limited stocks. The perception of the stock status has been based on Danish LPUE data. However, due to changes in management regulations in 2002 and 2007 it is not known whether fluctuations in lpue is due only to regulation changes or if it also to some degree reflects stock changes.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

Fishing pressure)		
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✓	below possible ref. points

Stock size		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

The state of this stock is unknown. Based on the assumed low density (based on lowest observed density at FU 7, Fladen Ground), harvest rates are considered low for this stock.

RECENT MANAGEMENT ADVICE: ICES advises (for 2015 and 2016) on the basis of the data-limited approach but cannot quantify the resulting catches. The implied landings should be no more than 625 t.

For the stock in this functional unit (FU), management is implemented at the functional unit level.

Other considerations

ICES approach to data-limited stocks

In the absence of information from this functional unit, the advice is based on an assumed low density of 0.2 Nephrops per m^2, corresponding to the lowest observed density in the North Sea (FU 7, Fladen Ground). Even though the discards are unknown, the last ten years' average landings (625 t) would imply a harvest rate below the range of MSY harvest rates in the North Sea (between 8% and 16%), even if a high discard rate is assumed, which is considered conservative. ICES cannot quantify the resulting catches. The implied landings should be no more than 625 t. Discards are known to take place for part of the fleet but this does not cover all the fisheries and is therefore considered an underestimate of total discarding.

STECF COMMENTS: STECF agrees with the ICES advice for 2015 and 2016.

2.1.9 Norway lobster (*Nephrops norvegicus*) in Horns Reef (FU 33)

FISHERIES: For several years Denmark was the only country exploiting *Nephrops* in this FU, and accounted for more than 90% of total landings up to 2005. However in recent years Germany and

Netherlands have expanded their share of this stock. In 2007 total landings amounted to 1,467 t, and were the highest recorded, but have decreased since then. In 2013 total landings were 946 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. In the absence of a full analytical assessment, ICES bases its advice for this Nephrops FU on of its approach to data-limited stocks. The perception of the stock has been based on LPUE and length distribution in the catches.

REFERENCE POINTS:

No reference points are defined for this stock

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

The state of this stock is unknown. Based on the assumed low density (based on lowest observed density at FU 7 (Fladen Ground), harvest rates are considered low for this stock.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the data-limited approach, but cannot quantify the resulting catches. The implied landings should be no more than 1136 t (in 2015 and 2016). For the stock in this functional unit (FU), management is implemented at the functional unit level.

Other considerations

ICES approach to data-limited stocks

In the absence of information from this functional unit, the advice is based on an assumed low density of 0.2 Nephrops m−2, corresponding to the lowest observed density in the North Sea (FU 7, Fladen Ground). Even though the discards are unknown, the last ten years' average landings (1136 t) would imply a harvest rate below the range of MSY harvest rates in the North Sea (between 8% and 16%), even if a high discard rate is assumed, which is considered conservative. ICES cannot quantify the resulting catches. The implied landings should be no more than 1136 t. Discards are known to take place for part of the fleet but this does not cover all the fisheries and is therefore considered an underestimate of total discarding.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015and 2016.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.1.10 Norway lobster (*Nephrops norvegicus*) Devil's Hole (FU 34)

FISHERIES: Peak landings of 1305 t from this functional unit were recorded in 2009. Since then they have declined substantially. In 2013 total landings amounted to 121 t. UK (Scotland accounts for nearly all landings.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a calculation of potential landing options and harvest rates, given the known surface area of Nephrops habitat and assumed densities of the functional unit.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

Fishing pressure		
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Stock size		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↘	Declining

The state of the stock is unknown. The mean survey density indicates the stock is declining. No survey information is available for 2013.

RECENT MANAGEMENT ADVICE: ICES advises (for 2015 and 2016) on the basis of ICES approach to data-limited stocks that catches should be no more than 410 t. If discard rates do not change from the recent average (2008–2011), this implies landings of no more than 383 t.

To protect the stock in this functional unit (FU), management should be implemented at the functional unit level.

Other considerations

ICES approach to data-limited stocks

For this stock, average catches of 673 t for the last ten years correspond to a potential harvest rate of 8.6 %, based on the 2012 density estimate of 0.15 Nephrops m−2. This is considered within the range of MSY harvest rates in the North Sea (between 8% and 16%). For this reason it is not recommended to use the average landings of the last ten years as the basis for advice.

Recent average catches of the last three years correspond to a potential harvest rate of 5.3%. This is considered below the range of MSY harvest rates in the North Sea (between 8%–16%), which is considered conservative. Considering that no discard ban is in place in 2015, this results in landings of no more than 383 t, assuming that discard rates do not change from the recent average (2008–2011) and a discard mortality of 100 %.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

2.2 Northern shrimp (*Pandalus borealis*) on Fladen Ground (Division IVa)

The stock status and advice for this stock for 2015 will be released in the autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: In the EU zone of the North Sea, *Pandalus* on the Fladen Ground (Div. IVa) is the main shrimp stock exploited, which has been exploited. This stock has been exploited mainly by Danish and UK trawlers with the majority of landings taken by the Danish fleet. Historically, large fluctuations in this fishery have been frequent, for instance between 1990 and 2000 annual landings ranged between 500 t and 6000 t. However since 2000 a continuous declining trend is evident, and in 2004 and 2005 recorded landings dropped to below 25 t. No catches were recorded in 2006-2012. Information from the fishing industry in 2004 gives the explanation that this decline is caused by low shrimp abundance, low prices on small shrimp characteristic for the Fladen Ground and high fuel prices.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No assessment of this stock has been made since 1992, due to insufficient assessment data.

REFERENCE POINTS: There is no basis for defining precautionary reference points for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

The available information is inadequate to evaluate stock trends. The state of the stock is therefore unknown. The stock has not been exploited since 2005.

RECENT MANAGEMENT ADVICE: There is insufficient information to evaluate the status of the stock. ICES advises on the basis of the approach for data limited stocks that catches should not increase, unless there is evidence that this will be sustainable. This corresponds to zero catches. The advice for this fishery in 2014 and 2015 is the same as the advice for 2013

Other considerations

The available information is inadequate to evaluate stock trends. The state of the stock is therefore unknown and fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, since the current landings are around zero, ICES advises that catches should not increase, unless there is evidence that this will be sustainable. This corresponds to zero catches.

Additional considerations

No fishery has existed from 2006 onwards. No new data are available on the stock.

If the landings of this fishery return to substantial levels, a data collection programme should be implemented.

STECF COMMENTS: STECF agrees with the ICES advice that on the basis of the ICES approach to data-limited stocks, catches should not increase, unless there is evidence that this will be sustainable. This corresponds to zero catches for 2014 and 2015.

2.3 Northern shrimp (*Pandalus borealis*) in Division IIIa and Division IVa East (Skagerrak and Norwegian Deeps)

The stock status and advice for this stock for 2015 will be released in the autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: *Pandalus borealis* is fished by bottom trawls at 150–400 m depth throughout the year by Danish, Norwegian and Swedish fleets. Northern shrimps are mainly caught by 35–45 mm single- and twin-trawl nets (minimum legal mesh size is 35 mm). A larger number of vessels use sorting grids on a voluntary basis. The number of Danish trawlers has declined over the last 20 years, whereas the Norwegian fleet of <11 m vessels has expanded. No significant changes took place in the Swedish fishery during the last decade except for an increase in the use of twin trawls in the last two years. Because of this development (and the accompanying increase in the size of the trawls), the efficiency of the fisheries has increased.

Total landings have varied between 10,000 and 15,000 t in the period 1985- 2009. Discarding of small shrimp takes place, mainly due to high grading. Discard estimates are available since 2009 and have been included in the assessments. Overall discard percentage is around 12 %. In 2010 total catches were around 8,300 t, 9,000 t in 2011 and 8,800 t in 2012.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

In recent years several assessment models, including both cohort based and stock production models, have been applied for this stock. This year's advice is based on a surplus production model fitted by Bayesian methods using commercial catch and effort data and trawl survey data.

REFERENCE POINTS:

	Type	Value	Technical basis
MSY approach	MSY $B_{trigger}$	0.5 of B_{MSY}*	Relative value. B_{MSY} is directly estimated from the assessment surplus production model and changes when the assessment is updated.
	F_{MSY}	*	Relative value. F_{MSY} is directly estimated from the assessment surplus production model and changes when the assessment is updated.
Precautionary approach	B_{lim}	0.3 of B_{MSY}	Relative value.
	B_{pa}	Not defined.	
	F_{lim}	1.7 of F_{MSY}	Relative value (the F that drives the stock to B_{lim}).
	F_{pa}	Not defined.	

STOCK STATUS:

F (Fishing Mortality)

	2010	2011	**2012**	
MSY (F_{MSY})	✓	✗	✓	At target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Above limit

The assessment using a Bayesian stock production model provides relative rather than absolute measures of stock status. The assessment shows that since the beginning of the 1990s stock biomass has been above MSY $B_{trigger}$ and fishing mortality below F_{MSY}, although in recent years stock biomass approached MSY $B_{trigger}$ and F has been very close to F_{MSY}. Recruitment indices have increased from a low value in 2010.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of MSY considerations that catches should be no more than 6000 t in 2014. If discard rates do not change from the average of the last three years, this implies landings of no more than 5426 t. Additional measures should be taken to address high grading.

SPECIAL COMMENTS: ICES notes that, according to the assessment model used and adhering to the 2013 TAC, stock biomass is expected to be above MSY Btrigger in 2014. Furthermore, catches of up to10 000 t in 2014 correspond to median F2014/FMSY <= 0.97. Therefore, catches of up to 10 000 t in 2014 are considered consistent with the MSY approach. With these catches in 2014, the stock biomass is forecast to remain above MSY $B_{trigger}$ in 2015, see table below.

Catch options (2014) produced by the Bayesian production model

Catch options 2014*	**6**	**8**	**10**	**12**	**14**
Stock size (B_{2015}/B_{MSY}), median	0.84	0.81	0.78	0.76	0.73
Fishing mortality (F_{2014}/F_{MSY}), median	0.54	0.74	0.97	1.19	1.45
Probability of B_{2015} falling below B_{lim}	6%	6%	6%	7%	7%
Probability of F_{2014} exceeding F_{lim}	5%	10%	19%	29%	39%

However, ICES also notes that according to this assessment model any catch value in the range 6000–10 000 t in 2014 corresponds to a 6% probability of B(2015) being less than B_{lim}. This indicates that the probability surface is very flat and, therefore, a formal 5% probability criterion (ICES criterion) would imply a very low catch in 2014, well below any catch value observed in the last three decades, which is considered overly restrictive. However, as the assessment shows a substantial decrease in stock biomass in recent years (in line with the decreases in the Norwegian survey and commercial lpue indices), a cautious approach to the advice is required this year, until historical stock development and current status in relation to reference points are further evaluated and confirmed by an alternative (length-based) assessment model expected to be used in next year's assessment.

STECF COMMENTS: STECF notes that assessment and forecast results are uninformative on the likely consequences for stock biomass of different catch options between 6,000 t and 14,000 t, as the risk of falling below B_{lim} is essentially the same within this range of catches. However for the same range of catch options the probability of exceeding F_{lim} increases from 5% for catches of 6,000 t to almost 40%, for 14,000 t.

STECF therefore advises that in order to keep the probability of exceeding F_{lim} to 5%, STECF agrees with the ICES advice that catches in 2014 should not exceed 6,000 t.

STECF agrees with ICES that the management of this stock should address the discarding of small shrimps and high grading.

2.4 Cod (*Gadus morhua*) in the Kattegat

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Cod in the Kattegat is exploited by Denmark, Sweden, and Germany. The fishery is conducted by both trawl and gillnets. Landings fluctuated between 4,000 and 22,000 t (1971-2001). Landings have decreased continuously since then. Reported landings were 92 t in 2013. Fishery-independent information indicates that removals from the stock are substantially higher than reported landings and that the mismatch between TAC/official landings and the total removals has increased in the most recent years.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is considered indicative of trends only. The assessment is based on the recently developed stochastic state-space model (SAM) that provides statistically sound estimates of uncertainty in the model results. The model allows estimating potential additional removals from the stock, not represented by reported landings. The stock estimates for these years consequently rely more on survey information.

MANAGEMENT AGREEMENT: The EU has adopted a long-term plan for cod stocks and the fisheries exploiting those stocks (Council Regulation (EC) 1342/2008). This regulation repeals the recovery plans in Regulation (EC) No 423/2004, and has the objective of ensuring the sustainable exploitation of the cod stocks on the basis of maximum sustainable yield while maintaining a target fishing mortality of 0.4 on specified age groups.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management Plan	SSB_{MP}	6400	B_{lim}
	F_{MP}	0.4	Same as for other cod stocks
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	6400 t	lowest observed SSB before the late 1990s.
	B_{pa}	10 500 t	B_{lim}*exp(1.645*0.3).
	F_{lim}	Not defined	
	F_{pa}	Not defined	

(Unchanged since: 2011)

STOCK STATUS:

F (Fishing Mortality)				
	2009	2010	**2011**	
MSY (F_{MSY})	?	?	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	?	?	Unknown

SSB (Spawning Stock Biomass)				
	2010	2011	**2012**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity
Management plan (SSB_{MP})	✗	✗	✗	Below limit

Spawning stock biomass has been at a historically lowest level since 2000. Recruitment in recent years has been among the lowest in the time series. Current level of fishing mortality is unknown due to a pronounced difference between the catch data (landings plus discards estimated from observer data) and the total removals from the stock estimated within the model based on survey data. The harvest rate based on available catch data shows a decline from 2000 to 2009, and a stable level in 2009-2011.

RECENT MANAGEMENT ADVICE:

New data (catch and surveys) available for this stock do not change the perception of the stock. Therefore, the advice for 2015 is the same as the advice for 2013 and 2014: *ICES advises on the basis of precautionary considerations that there should be no directed fisheries and bycatch and discards should be minimised.*

Other considerations

Due to uncertainty in the recent estimates, especially concerning fishing mortality, reliable predictions cannot be presented.

The discard rate in 2013 is the highest of the whole times series with discard estimates (1997-2013). Existing management measures have not been effective to reduce discards. Additional measures to decrease the discard rates should rapidly be implemented.

Management plan

According to the long-term management plan, the fishing mortality in 2013 shall be reduced by 25 % compared with the fishing mortality rate in 2011, unless the target 0.4 is reached. The current level of fishing mortality on cod in the Kattegat cannot be reliably estimated. According to Article 9 in the management plan, TAC and effort should be reduced by 25 % in cases when it is advised that the catches of cod should be reduced to the lowest possible level.

At present situation, where the cod landings are very low compared to the available estimates of discards and estimated unallocated removals from the stock, TAC is not effectively regulating total

removals from the stock. The Articles 11 and 13 in the management, which allow Member States to avoid reductions in effort by introducing measures to avoid catching cod (closed areas, selective gears) have resulted in changes in fisheries. Evaluation of effectiveness of these measures for cod recovery and possible improvements is currently ongoing within EU STECF and bilaterally by Sweden and Denmark.

ICES evaluated this plan in 2009 and concluded it was in accordance with the precautionary approach if implemented and enforced adequately; however, this evaluation is not expected to be realistic in a situation of high unaccounted removals as estimated by the present assessment model.

Precautionary considerations

The stock size is considered to be far below B_{lim}, while the exploitation status is uncertain. Therefore, there should be no directed fisheries and bycatch and discards should be minimised.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that there should be no directed fisheries and that bycatch and discards should be minimized. STECF advises that this advice should be interpreted to mean that in 2015, catches of cod from the Kattegat should be reduced to the lowest possible level.

STECF notes that, under Article 12 of the management plan fishing effort should be adjusted by the same percentage as the TAC (25% reduction) implying that the TAC for 2015 should be set at 75 t.

2.5 Cod (*Gadus morhua*), in the North Sea (IIa, IIIa Skagerrak, IV and VIId)

FISHERIES: North Sea cod are exploited by fleets from Belgium, Denmark, The Netherlands, Germany, France, Sweden, Norway, and UK. Small catches are also taken by fleets from Poland and the Faroe Islands. Cod are taken mainly by mixed fisheries using otter trawls, seine nets, gill nets, long-lines and beam trawl. The stock is managed by TAC through joint negotiation between the EU and Norway, technical and supporting effort regulations in units of days at sea per vessel since 2003. Historically, landings peaked at about 350,000 t in the early 1970s, subsequently declining to around 200,000 t by 1988. From 1989 until 1998, landings remained between about 100 000 t and 140,000 t. Reported landings decreased sharply in 1999 to 96,000 t, and then declined steadily to 24,400 t in 2007. Reported landings for 2011, 2012 and 2013 were about 32 900t, 32 000t and 31 100t respectively. The assessment area for this stock includes ICES Divisions IIIa (Skagerrak), VIId and Sub-area IV, which are different management areas and for which separate TACs are set.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment used the age-based model (SAM) incorporating landings and discards, and calibrated with one survey index (from IBTS quarter 1). For ICES Subarea IV and Divisions VIId, discards were estimated from the Scottish discards sampling program up until 2005, raised to the total international fleet. The coverage of national discard data has subsequently improved (in 2013 covering 95% of the landings by weight in Subarea IV, 79% in Division IIIa–Skagerrak, and 79% in Division VIId).

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management	SSB_{MP}	150 000 t	= B_{pa}
Plan	F_{MP}	0.4	Mortality rate when SSB > $SSB_{MP.}$
MSY	MSY	150 000 t	The default option of B_{pa}.

Approach	$B_{trigger}$		
	F_{MSY}	0.19	F_{max} 2010, within the range of fishing mortalities consistent with F_{MSY} (0.16–0.42).
Precautionary approach	B_{lim}	70 000 t	Bloss **(**~1995**).**
	B_{pa}	150 000 t	Bpa = Previous MBAL and signs of impaired recruitment below 150 000 t.
	F_{lim}	0.86	Flim = Floss (~1995).
	F_{pa}	0.65	Fpa = Approx. 5th percentile of Floss, implying an equilibrium biomass > Bpa.

(Unchanged since: 2011)

MANAGEMENT AGREEMENT: In 2005 the EU and Norway revised their initial agreement from 1999 and agreed to implement a long-term management plan for the cod stock. This plan was again updated in December 2008 and entered into force on 1 January 2009. The plan aims to be consistent with the precautionary approach and is intended to provide for sustainable fisheries and high yield leading to a target fishing mortality to 0.4. The main changes between the 2008 and 2004 plans is a phasing (transitional and long-term phase) and the inclusion of an F reduction fraction. The 18th of January 2013, the Parties agree to restrict their fishing on the basis of TACs consistent with a fishing mortality rate that maximises long-term yield and maintains spawning stock biomass above Bpa. The transitional arrangement and long-term management are as follows:

Transitional arrangement:

F will be reduced as follows: 75 % of F_{2008} for the TACs in 2009, 65 % of F_{2008} for the TACs in 2010, and applying successive decrements of 10 % for the following years.

The transitional phase ends as from the first year in which the long-term management arrangement leads to a higher TAC than the transitional arrangement.

Long-term management:

If the size of the stock on 1 January of the year prior to the year of application of the TACs is:

- Above the precautionary spawning biomass level, the TACs shall correspond to a fishing mortality rate of 0.4 on appropriate age groups;
- Between the minimum spawning biomass level and the precautionary spawning biomass level, the TACs shall not exceed a level corresponding to a fishing mortality rate on appropriate age groups equal to the following formula:
- 0.4 - (0.2 * (Precautionary spawning biomass level - spawning biomass) / (Precautionary spawning biomass level - minimum spawning biomass level))
- At or below the limit spawning biomass level, the TAC shall not exceed a level corresponding to a fishing mortality rate of 0.2 on appropriate age groups.

This plan entered into force on 1 January 2013.

The EU has adopted a long-term plan for this stock with the same aims as the EU-Norway plan (Council Regulation (EC) 1342/2008).

ICES evaluated the EC management plan (EC 1342/2008) and the EU–Norway long-term management plan in March 2009 (Annex 6.3.3) and concluded that these management plans are in

accordance with the precautionary approach only if implemented and enforced (ICES, 2011a). A joint ICES–STECF group met during 2011 to conduct a historical evaluation of the effectiveness of these plans (ICES, 2011c; Kraak et al., 2013). The group concluded at the time that although there has been a gradual reduction in F and discards in recent years, the plans for North Sea cod had not controlled F as envisaged. The reductions in F observed since 2011 seem to be more pronounced than predicted in this evaluation.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MP})	✗	✗	✗	Above target

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity
Management plan (SSB_{MP})	✗	✗	✗	Below trigger

Fishing mortality declined from 2000 and is now estimated to be around 0.4, between F_{pa} and the F_{MSY} proxy. SSB has increased from the historical low in 2006, and is now in the vicinity of B_{lim}. Recruitment since 2000 has been poor.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the EU–Norway management plan that catches in 2015 should be no more than 35 486 tonnes. If discard rates do not change from those in 2013, this implies landings of no more than 26 713 tonnes.

Other considerations

Management plan

The EU–Norway management plan as updated in December 2008 aims to be consistent with the precautionary approach and is intended to provide for sustainable fisheries and high yield, leading to a target fishing mortality of 0.4 (for details see Annex 6.3.3).

The EU has adopted a long-term plan for this stock with the same aims (Council Regulation (EC) 1342/2008; Annex 6.3.3). In addition to the EU–Norway agreement, the EU plan also includes effort restrictions that reduce the kW-days available to EU vessels in the main metiers catching cod directly proportional to reductions in fishing mortality until the long-term phase of the plan is reached, for which the target F is 0.4 if SSB is above B_{pa}. No reduction in effort ceilings was applied between 2012 and 2014.

The trigger for the long-term phase of the management plan was reached in 2013, when the TAC derived from the long-term phase exceeded the TAC derived from the recovery phase for the first time. Application of the long-term phase calculates the target F as $0.4-(0.2 \times (B_{pa}-SSB_{2014}) / (B_{pa}-B_{lim}))$, leading to $F_{2015} = 0.2$. However, since this implies forecast landings for 2015 that are 20% smaller than the TAC in 2014, the TAC constraint of ±20% is implemented, leading to $F_{2015} = 0.22$.

Following the management plan long-term phase, catches in 2015 should be no more than 35 486 t in total for Subarea IV and Divisions IIIa West and VIId. If discard rates do not change from those in 2013, this implies landings of no more than 26 713 t. Because of annual changes in fishing pattern the assumption on discard ratio is based on the most recent estimate.

MSY approach

Following the ICES MSY approach requires fishing mortality to be reduced to 0.10 (lower than F_{MSY} because $SSB_{2015} <$ MSY $B_{trigger}$), resulting in catches of less than 17 220 t in 2015. This is expected to lead to an SSB of 124 697 t in 2016.

PA approach

Even a zero catch in 2015 is not expected to result in SSB reaching B_{pa} in 2016.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for individual species exploited in a mixed fishery (ICES, 2014b). In contrast to single-species advice, mixed-fisheries advice offers no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios that provide insight into the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate a potential undershooting or overshooting of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

The "Minimum", "Cod MP", and "Effort management" scenarios of the mixed-fisheries analyses are consistent with the single-species advice for cod. It is noted that in the "Max" scenario, the implied F would exceed F_{pa}; this is not considered precautionary.

Rationale	**Catch (2015)**	**Landings (2015)**	**Discards (2015)**	**Basis**	**F_{total} (2015)**	**F_{land} (2015)**	**F_{disc} (2015)**	**SSB (2016)**	**%SSB[1)] Change**	**%TAC[2)] Change**
Management plan	35.486	26.713	8.773	Long-term phase	0.22	0.15	0.07	109.1	+35%	−20%
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used										
Maximum	117.656	91.087	26.569	A	1.14	-	-	39.170	−51%	+174%
Minimum	27.910	22.267	5.643	B	0.18	-	-	109.603	+36%	−32%
Cod MP	33.528	26.713	6.815	C	0.22	-	-	104.855	+30%	−19%
SQ effort	57.698	45.681	12.017	D	0.41	-	-	84.826	+5%	+39%
Effort_Mgt	34.647	27.597	7.050	E	0.23	-	-	103.913	+29%	−16%

Weights in thousand tonnes.
[1)] SSB 2016 relative to SSB 2015.
[2)] Landings 2015 relative to TACs 2014 (North Sea 27 799 + Skagerrak 3972 + Eastern English Channel 1620 = 33 391 t).

Mixed-fisheries assumptions:

E. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
F. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
G. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
H. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
I. Effort management scenario: Effort reductions according to cod and flatfish management plans.

It is assumed that there is no change in fishing mortality in 2014 relative to 2013. This is based on the fact that there is no reduction in effort ceilings for 2014 compared to 2013. If discard rates in

2014 do not change from 2013, this would lead to an assumed overshoot of the TACs in 2014, higher than the additional 12% added to the North Sea TAC for fully documented fisheries (FDF) purposes.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the provision in the long-term management plan for cod (Council Regulation (EC) 1342/2008; Annex 6.4.3) which prescribes a target fishing mortality rate of F=0.4 when the stock is above Bpa (= BMSY= 150,000 t) is not consistent with the objective of achieving F_{MSY} (F_{MSY}=0.19).

STECF notes that the advice for cod in subarea IV (North Sea) and division VIId (Eastern Channel) and IIIa West (Skaggerak) for 2015 (F=0.22), implies a reduction in fishing mortality of 45% from the estimated 2014 fishing mortality (F= 0.4). Hence the provisions of Article 12.2 (b) and 12.4 (a) of Council Regulation (EC) 1342/2008, prescribe that the maximum allowable fishing effort for 2015 for the effort groups concerned, should be set equal to 55 % of the maximum allowable fishing effort for 2014.

With regards to the introduction of a landing obligation in Skagerrak, STECF has estimated the following:

TAC in Skagerrak represents a fixed share of 12% of the total TAC, and assuming that the TAC is set in accordance with ICES advice on landings, the TAC in Skagerrak for 2015 in the absence of the landing obligation would be 3 206 t. According to data provided to ICES and used in the assessment, the discard rate in the Skagerrak (31%) is higher than the discard rate in the North Sea (25%) and discards in the Skagerrak represented 19% of total discards from IIIa, IV and VIId. This is attributable to the lower mesh size (90 mm) used in Skagerrak for the main demersal fisheries. 19% of the 8 773 t total discards estimated for cod in IIIa, IV and VIId for 2015 equates to 1 667 t. Assuming the proportion of total cod discarded in the Skagerrak remains the same as in 2013, the estimated total catch of cod in Skagerrak corresponding to the ICES advice for 2015 is 4 873 t.

STECF notes that many vessels previously belonging to the TR 2 gear group will switch to using TR1 gears as a result of the adoption of proposed technical measures for the Skagerrak. Such a switch is likely to result in a lower proportion of the catch of cod being discarded but STECF has no objective means to estimate the magnitude of such an effect.

2.6 Haddock (*Melanogrammus aeglefinus*) in IIa (EU zone), in Sub-area IV (North Sea) and Divisions IIIa (Skagerrak- Kattegat) and VIa (West of Scotland)

FISHERIES: North Sea haddock is exploited predominantly by fleets from the UK (Scotland), Norway and Denmark. Haddock in Division VIa is caught mainly by fleets from the UK (Scotland) and Ireland. Most landings are for human consumption and are taken by towed gears, although there is a small by-catch in the small-mesh industrial fisheries. Substantial quantities are discarded in some years when new year-classes recruit to the fishery. Over 1963-2006, catches in Division IV and IIIa have ranged from 55 000 t to 930 000 t. In recent years catches have decreased and the estimates for 2005 to 2012 (37 600 t) represent the lowest on record. A contributory factor to the lower catches in recent years has been the maintenance of low fishing mortality rate. Over 1978-2002, catches in Division VIa have ranged from 46 400 t to 13 400 t. Subsequently catches varied between 10 900 to 6 700 tonnes between 2003 and 2007. The catches fell to around 4 100 tonnes in 2008 and varied between 3 300 and 5800 tonnes between 2009 and 2012. The total catch for Northern shelf haddock (Division IV, IIIa and VIa) was estimated to be 49 700 tonnes in 2011, 43 200 tonnes in 2012 and 46 800 tonnes in 2013.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The age-based assessment model (TSA) is calibrated with two survey indices. Discards and industrial by-catch data were included in the assessment. Discards were estimated from the discards sampling programme from several countries, with most observations coming from Scotland. Previously haddock in IIIaW and IV were assessed separately from haddock in VIa (see additional considerations below).

MANAGEMENT AGREEMENT: In 1999 the EU and Norway agreed to implement a long-term management plan for the North Sea haddock stock (Subarea IV and Division IIIaW), which is consistent with the precautionary approach and which is intended to constrain harvesting within safe biological limits (SSB > B_{lim}) and is designed to provide for sustainable fisheries and high potential yield (F_{HCR} = 0.3). A revised management plan was implemented in January 2009. An EU management plan proposal for Division VIa was evaluated by ICES (Needle, 2010) and is considered to be precautionary. Those management plans (or management plan proposals) for Subarea IV, Division IIIaN, and Division VIa are not relevant for the newly defined stock.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
Management plan (Subarea IV)	F_{MP}	0.3	Management strategy evaluation.
	SSB_{MP}	100 000 t 140 000 t	Trigger values B_{lim} and B_{pa}.
MSY approach (whole area)	MSY $B_{trigger}$	88 000 t	1.4 × B_{lim} from segmented regression changepoint estimate.
	F_{MSY}	0.35	Estimated by application of EqSIM evaluation.
Precautionary approach (whole area)	B_{lim}	63 000 t	Segmented regression changepoint estimate.
	B_{pa}	88 000 t	B_{pa} ~ 1.4 × B_{lim}.
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(unchanged since: 2014)

STOCK STATUS:

	Fishing pressure		
	2011 2012	**2013**	
MSY (F_{MSY})	✓ ✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	? ?	?	Not defined

	Stock size		
	2012 2013	**2014**	
MSY ($B_{trigger}$)	✓ ✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓ ✓	✓	Full reproductive capacity

Fishing mortality has been below F_{MSY} since 2008 and SSB has been above the MSY $B_{trigger}$ since 2001. Recruitment is characterized by occasional large year classes, the last of which was the strong 1999 year class. Apart from the 2005 and 2009 year classes, which are around the long-term average, recent recruitment has been poor.

RECENT MANAGEMENT ADVICE:

The Northern Shelf haddock stock was previously assessed as two separate stocks: Subarea IV and Division IIIaW (North Sea and Skagerrak), and Division VIa (West of Scotland).

ICES advises on the basis of the MSY approach that catches should be no more than 54 580 t for the whole assessment area. If rates of discards and industrial bycatch do not change from the average of the last three years (2011–2013), this implies human consumption landings of no more than 48 176 t.

Other considerations

Management plan

Management plans (or management plan proposals) for Subarea IV, Division IIIaN, and Division VIa are not relevant for the newly defined stock.

MSY approach

Following the ICES MSY approach implies fishing mortality to be increased to 0.35, which implies catches of no more than 54 580 t. If rates of discards and industrial bycatch do not change from the average of the last three years (2011–2013), this implies human consumption landings of no more than 48 176 t in 2015. This is expected to lead to an SSB of 117 476 t in 2016.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate the potential for underestimating or overestimating the advised landings corresponding to the single-species advice. The results indicate which of the species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

All but the “Maximum” scenario of the mixed-fisheries analyses show an underestimate compared to the single-species advice for haddock.

Rationale	**Total Catch 2015**	**Human consumption Landings 2015**	**Discards 2015**	**IBC 2015**	**Basis**	**Total F 2015**	**F(Landings) 2015**	**F (Disc) 2015**	**F (IBC) 2015**	**SSB 2016**	**%SSB[1)] Change**	**%TAC[2)] Change**
MSY	54.580	48.176	6.404	< 0.001	F_{MSY}	0.35	0.287	0.063	< 0.001	117.426	−28%	8%
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used												
Maximum	92.735	80.792	11.943	-	A	0.71	-	-	-	80.374	−51%	84%
Minimum	12.880	11.466	1.414	-	B	0.08	-	-	-	152.156	−7%	−74%
Cod MP	18.661	16.592	2.069	-	C	0.11	-	-	-	146.776	−11%	−62%
SQ effort	33.578	29.759	3.819	-	D	0.21	-	-	-	132.999	−19%	−32%
Effort_Mgt	15.811	14.066	1.745	-	E	0.09	-	-	-	149.426	−9%	−68%

Weights in thousand tonnes.

Under the assumption that effort is linearly related to fishing mortality.

[1)] SSB 2016 relative to SSB 2015.

[2)] Total landings 2015 relative to the combined TACs 2014: TAC IV = 38.285; TAC IIIa = 2.355; TAC VIa (2014) = 3.988; Total = 44.628.

Mixed-fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

It is assumed that there is no change in fishing mortality in 2014 relative to 2013. This is based on the fact that there is no reduction in effort ceilings for 2014 compared to 2013.

Additional considerations

Haddock in the Northern Shelf were previously assessed as two separate stocks: Subarea IV and Division IIIa (North Sea and Skagerrak), and Division VIa (West of Scotland). WKHAD (ICES, 2014e) concluded that there was strong evidence that the stocks were not biologically distinct and they should therefore be assessed as a single stock.

Management should take into account protection of stock components in the different areas to avoid local depletion. ICES has not split the overall TAC between areas. To advise on a possible split ICES would need policy guidelines on the basis for the split, coupled with further analysis of stock distribution.

Management considerations

A management plan for the whole area needs to be developed, taking into account the need to protect local components of the stock.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that in 2013 and earlier years, two separate assessments were carried out for the stocks in the West of Scotland and the North Sea/Skagerrak. This year, the two were combined into one assessment. Last year's advice was based on the EU–Norway management plan (Subarea IV and Division IIIa) and the MSY approach (Division VIa). This year´s advice is based on the MSY approach.

STECF notes that discards are highly variable without obvious long-term trend but appear to have been declining in recent years. Discard rates in 2012 and 2013 are the lowest observed in the time-series and appear to be linked to low recruitment.

With regards to the introduction of a landing obligation in Skagerrak, STECF has estimated the following:

Assuming that the TAC is set in accordance with ICES advice on landings, the TAC in Skagerrak for 2015 in the absence of the landing obligation would be 2 543 t (representing an 8% increase on the 2014 TAC). Discards in the Skagerrak represented 11% of total discards based on the average of the years 2010-2012. 11% of the 6 404 t total discards estimated for haddock in IIIa, IV and VIa for 2015 equates to 674 t. Assuming the proportion of total haddock discarded in the Skagerrak remains the same as the average of the years 2010-2012, the estimated total catch of haddock in Skagerrak for 2015 is 3 217 t.

STECF notes that the provisions of the EU Norway management plan would imply that total catches from Subarea IV, Divisions IIa and VIa in 2015 would be 47,020 t and if rates of discards and industrial bycatch do not change from the average of the last three years (2011–2013), this implies human consumption landings of no more than 41,518 t.

STECF notes that many vessels previously belonging to the TR 2 gear group have switched to using TR1 gears as a result of the adoption of proposed technical measures for the Skagerrak. Such a switch is likely to result in a lower proportion of the catch of haddock being discarded but STECF has no objective means to estimate the magnitude of such an effect.

2.7 Saithe (*Pollachius virens*) in Divisions IIa (EU zone), IIIa, Subareas IV (North Sea) and VI (West of Scotland).

FISHERIES: In the various areas over which this stock is distributed, saithe are primarily taken in a direct trawl fishery in deep water along the Northern Shelf edge and the Norwegian Trench. In the first quarter of the year the fisheries are directed towards spawning aggregations, while smaller fish are targeted during the rest of the year. Gill-nets are also used, and there is still a small purse seine fishery in Norwegian coastal waters. Norway has introduced 120 mm mesh size in trawls, but in EU waters 110 mm may still be used by the EU fleets. Saithe is also taken as part of the mixed roundfish fishery. The stock is exploited by nations including Norway, France, Germany, the UK, Ireland, Spain and Denmark. Between 1967-2006, ICES Working Group reported landings have varied between 88 326t and 343 967t and have been relatively stable over the last 21 years (mostly just over 100 000 t). In 2012 and 2013 the landings were 77 717t and 79 887t respectively. The stock is managed by TAC. Separate TACs are set for Saithe in IIa (EU zone), IIIa, North Sea combined (Sub-area IV) and Sub-area VI.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment (XSA) calibrated using data from three commercial cpue series and indices from two surveys. There are no discard estimates for the majority of this fishery. Discarding of saithe occurs in the non-targeted fisheries, but the level of discard is considered to be small compared to the total catch of saithe.

MANAGEMENT AGREEMENT:

In 2013, EU and Norway renewed the existing agreement on *"a long-term plan for the saithe stock in the Skagerrak, the North Sea and west of Scotland, which is consistent with a precautionary approach and designed to provide for sustainable fisheries and high yields. The plan shall consist of the following elements.* The 2008 management plan was extended without changes.

1. *Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 106,000 tonnes (Blim).*
2. *Where the SSB is estimated to be above 200,000 tonnes the Parties agreed to restrict their fishing on the basis of a TAC consistent with a fishing mortality rate of no more than 0.30 for appropriate age groups.*
3. *Where the SSB is estimated to be below 200,000 tonnes but above 106,000 tonnes, the TAC shall not exceed a level which, on the basis of a scientific evaluation by ICES, will result in a fishing mortality rate equal to 0.30-0.20*(200,000-SSB)/94,000.*
4. *Where the SSB is estimated by the ICES to be below the minimum level of SSB of 106,000 tonnes the TAC shall be set at a level corresponding to a fishing mortality rate of no more than 0.1.*
5. *Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 15 % from the TAC of the preceding year the Parties shall fix a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year.*

6. *Notwithstanding paragraph 5 the Parties may where considered appropriate reduce the TAC by more than 15 % compared to the TAC of the preceding year.*
7. *A review of this arrangement shall take place no later than 31 December 2015.*
8. *This arrangement enters into force on 1 January 2009."*

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management plan	SSB_{MP}	200 000 t	B_{pa}
	F_{MP}	0.3	Or lower depending on SSB in relation to SSB target.
MSY approach	MSY $B_{trigger}$	200 000 t	Default value B_{pa}
	F_{MSY}	0.3	Stochastic simulation using hockey-stick stock–recruitment.
Precautionary approach	B_{lim}	106 000 t	B_{loss} = 106 000 t (estimated in 1998).
	B_{pa}	200 000 t	Affords a high probability of maintaining SSB above B_{lim}.
	F_{lim}	0.6	F_{loss} is the fishing mortality estimated to lead to the stock falling below B_{lim} in the long term.
	F_{pa}	0.4	Implies that $B_{eq} > B_{pa}$ and $P(SSB_{MT} < B_{pa}) < 10\%$.

(last changed in: 2011)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MP})	✗	✗	✓	At limit

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	o	o	o	Increased risk
Management plan (SSB_{MP})	✗	✗	✗	Below trigger

Recruitment has been below average since 2006. Fishing mortality has fluctuated around F_{MSY} since 1997. SSB has declined since 2005 and has been slightly below B_{pa} for the last three years.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the EU–Norway management plan that catches should be no more than 80 097 t. If discard rates do not change from the average of the last two years (2012–2013), this implies commercial landings of no more than 72 854 t.

Other considerations

Management plan

The EU–Norway agreement management plan does not clearly state whether it is the SSB in the intermediate year or the SSB at the beginning or end of the TAC year that should be used to determine the status of the stock. ICES interprets this as being the SSB at the beginning of the intermediate year (2014).

Since SSB at the beginning of 2014 is below B_{pa}, paragraph 3 of the harvest control rule applies, resulting in an F of 0.28, which implies catches of no more than 80 097 t. If discard rates do not change from the average of the last two years (2011–2012), this implies landings of no more than 72 854 t. This is expected to lead to an SSB of 178 867 t in 2016, which remains below B_{pa}.

MSY approach

Following the ICES MSY approach implies a fishing mortality of 0.26 (below F_{MSY} because SSB is below MSY $B_{trigger}$), which implies catches of no more than 76 260 t. If discard rates do not change from the average of the last two years (2011–2012), this implies landings of no more than 69 364 t. This is expected to lead to an SSB in 2016 of 182 015 t.

PA approach

A 42% reduction in F is needed to increase SSB to around B_{pa} in 2016, which implies catches of no more than 54 457 t. If discard rates do not change from the average of the last two years (2011–2012), this implies landings of no more than 49 533 t.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

Following the “Cod MP”, “Minimum”, and “Effort management” scenarios of the mixed-fisheries analyses show that the saithe management plan options could not be fully utilized. It is noted that in the “Maximum” scenario, the implied F would exceed F_{pa} which is not considered precautionary.

Rationale	**Catches 2015** [1)]	**Landings 2015**	**Landings IIIa&IV 2015** [2)]	**Landings VI 2015** [2)]	**Basis**	**F 2015**	**SSB 2016**	**% SSB change** [3)]	**% TAC change** [4)]
Management plan	80 097	72 854	66 006	6848	Management plan	0.28	178 867	2.8	−14.9
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used									
Maximum	169 608	154 343	139 835	14 508	A	0.70	113 460	−35	80
Minimum	44 826	40 792	36 958	3834	B	0.14	214 756	23	−52
Cod MP	50 326	45 797	41 492	4305	C	0.16	210 160	21	−46

SQ effort	88 155	80 221	72 680	7541	D	0.30	178 820	3	−6
Effort_Mgt	65 876	59 947	54 313	5635	E	0.22	197 218	13	−30

Weights in tonnes.

[1)] Catches are calculated based on landings + average discard rate for EU fleet (2012–2013) and assuming no discards in the Norwegian fleet (total discard rate 9.0%).

[2)] Landings split according to the average in 1993–1998, i.e. 90.6% in Subarea IV and Division IIIa West and 9.4% in Subarea VI.

[3)] SSB 2016 relative to SSB 2015.

[4)] Landings 2015 relative to TAC 2014.

Mixed-fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

It is assumed that there is no change in fishing mortality in 2014 relative to 2013. This is based on the fact that there is no reduction in effort ceilings for 2014 compared to 2013.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that although saithe is assessed together in area IV and VI, TACs are set separately for areas IV and VI.

The fishery in Subarea VI consists largely of a directed deep-water fishery operating on the shelf edge but includes a mixed fishery operating on the shelf. Therefore STECF considers the management advice for saithe in area VI must take into account the management adopted for area VI cod (catches in 2015 should be reduced to the lowest possible level).

With regards to the introduction of a landing obligation in Skagerrak, STECF notes that discards are not included in the assessment of saithe. STECF furthermore notes that the management area for saithe includes the North Sea, the Skagerrak, the Kattegat and EU waters of the Baltic Sea and the Norwegian Sea and there is no separate TAC for the Skagerrak. According to data provided to the STECF (Commission data call: Ref. ARES(2013)222443-20/02/2013), landings in Skagerrak represented 6% of the combined (IIIa and IV) landings in 2012. Assuming that the TAC is set in accordance with ICES advice on landings and the distribution of landings in 2015 is the same as in 2012, the landings in Skagerrak for 2015 in the absence of the landing obligation would be 3 960 t. The average discard rate in the Skagerrak in 2012 to 2013 is 9%. Assuming a discard rate of 9%, the estimated total catch of saithe in Skagerrak for 2015 is 4 352 t.

STECF notes that many vessels previously belonging to the TR 2 gear group have switched to using TR1 gears as a result of the adoption of proposed technical measures for the Skagerrak. Such a switch is likely to result in a lower proportion of the catch of saithe being discarded but STECF has no objective means to estimate the magnitude of such an effect.

2.8 Whiting (*Merlangius merlangus*), Skagerrak & Kattegat (IIIa)

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: The majority of whiting landed from the Skagerrak and Kattegat are taken as by-catch in the small-mesh industrial fisheries. Some are also taken as part of a mixed demersal fishery. As in the North Sea stock, landings decreased in the Skagerrak and Kattegat drastically and were below 2,000 t since 1997. Nominal landings for 2013 were 155 t. ICES estimate of discards is 1486 t in 2013 which is five times higher than last year's estimate.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: There are no specific management agreements for whiting in IIIa.

REFERENCE POINTS:

No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	1980 - 2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning Stock Biomass)		
	1980 - 2011	
Qualitative evaluation	?	Insufficient information

The available landing data provide tentative information on the stock status. However, due to the uncertain population structure and possible changes in fishing patterns over the studied period, as well as the low quality of existing surveys, the present lack of knowledge prevent further interpretation.

RECENT MANAGEMENT ADVICE:

There are no new data available that change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2013 and 2014: *Based on the ICES approach for data limited stocks, ICES advises that catches should be no more than 500 tonnes.*

Other considerations

ICES approach to data limited stocks

For data limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years average catch, corresponding to catches (including discards) of no more than 500 t in 2013.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015.

2.9 Whiting (*Merlangius merlangus*) in Subarea IV (North Sea) and Division VIId (Eastern Channel)

FISHERIES: Whiting are taken as part of a mixed fishery, as well as a by-catch in fisheries for *Nephrops* and industrial species. Substantial quantities are discarded. Historically total catches have varied considerably ranging between 25,000 t and 153,000 t. In 2013, the Working Group estimated that about 26,965 t were caught. The human consumption landings in the North Sea in 2013 were 15,384 t with a TAC for 2013 of 18,932 t. The landings in the Eastern Channel amounted to 3,950 t.

Whiting are caught in mixed demersal roundfish fisheries, fisheries targeting flatfish, the *Nephrops* fisheries, and the Norway pout fishery. The current minimum mesh-size in the targeted demersal roundfish fishery in the northern North Sea has resulted in reduced discards from that sector compared with the historical discard rates. Mortality has increased on younger ages due to increased discarding in the recent year as a result of recent changes in fleet dynamics of *Nephrops* fleets and small mesh fisheries in the southern North Sea. The by-catch of whiting in the Norway pout and sandeel fisheries is dependent on activity in that fishery, which has recently declined after strong reductions in the fisheries. These are low values based on the assumption of a similar by-catch rate to that observed in previous years, when the industrial fisheries were at a low level. A larger catch allocation for by-catch may be required if industrial effort increases.

Catches of whiting in the North Sea are also likely to be affected by the effort reduction seen in the targeted demersal roundfish and flatfish fisheries, although this will in part be offset by increases in the number of vessels switching to small mesh fisheries.

The minimum mesh size was increased for demersal whitefish vessels to 120 mm in the northern North Sea in 2002 and this may have contributed to the substantial decrease in catches. Landing compositions from this area, in 2006 to 2009, indicate improved survival of older ages. In addition, the total number of discarded fish appears to have been reduced since 2003, from around 60% in 2003 to around 33% in 2012 and 22% in 2013. Because of the restrictive TACs, discard rates increased in 2010 and 2011, although they are estimated to have decreased again in 2012 and 2013. More selective gears were introduced in the *Nephrops* (TR2) fleet in 2012 which may also have contributed to a decline in discard rates.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The stock assessment is based on an XSA assessment, calibrated with two survey indices. Commercial catch-at-age data were disaggregated into human consumption, discards, and industrial by-catch components.

MANAGEMENT AGREEMENT: A management plan was agreed by EU and Norway in 2014 based on an adjusted target F of 0.15. ICES evaluated this harvest control rule (ICES, 2013d) and considered it as precautionary.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management plan	SSB_{MP}	Undefined.	
	F_{MP}	0.15	Management plan.
MSY	MSY $B_{trigger}$	Undefined.	

approach	F_{MSY}	Undefined.	
Precautionary approach	B_{lim}	184 000 t	Provisional reference point B_{loss} (SSB in 2007 in the 2013 assessment; ICES, 2013d)
	B_{pa}	Undefined.	
	F_{lim}	Undefined.	
	F_{pa}	Undefined.	

(changed in: 2014)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	?	?	?	Undefined
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	→	↘	↘	Below recent average

SSB has declined in recent years and is close to the minimum value of the time-series, while fishing mortality has been declining over most of the time-series. The average level of recruitment has been low since 2003.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the EU–Norway management plan that total catches should be no more than 28 317 tonnes. If rates of discards and industrial bycatch do not change from the average of the last three years (2011–2013), this implies human consumption landings of no more than 17 190 tonnes (13 678 tonnes in the North Sea and 3512 tonnes in Division VIId). Management for Division VIId should be separated from the rest of Subarea VII.

Other considerations

Management plan

The management plan agreed by EU and Norway in 2014 (see Annex 6.3.34) is based on the previous plan with an adjusted target F of 0.15. ICES evaluated this harvest control rule (ICES, 2013d) and considered this is precautionary.

Following the agreed management plan target F (F_{target} = 0.15) results in a TAC decrease for human consumption landings of more than 15%. Therefore, the TAC constraint of 15% should be applied, resulting in human consumption landings for the total area (Subarea IV and Division VIId combined) of no more than 17 190 t in 2015. If rates of discards and industrial bycatch do not change from the average of the last three years (2011–2013), this implies catches of no more than 28 317 t.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

In all scenarios except the "Maximum" and the "SQ effort", the catch options resulting from the whiting single-species advice cannot be fully utilized.

Rationale	Total Catch 2015	Total Landings IV+VIId 2015	Total Discards 2015	Total IBC 2015	Landings IV 2015	Landings VIId 2015	Basis
Management plan	28.317	17.190	10.337	0.790	13.678	3.512	15% TAC decrease
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used							
Maximum	76.754	45.494	31.260	-	41.218	4.276	A
Minimum	11.027	6.798	4.229	-	6.159	0.639	B
Cod MP	15.699	9.654	6.045	-	8.747	0.907	C
SQ effort	28.633	17.483	11.150	-	15.840	1.643	D
Effort_Mgt	13.479	8.299	5.180	-	7.519	0.780	E

Rationale	Total F 2015	F(Landings) 2015	F(Discards) 2015	F(IBC) 2015	SSB 2016	% SSB change [2)]	% TAC change[3)]
Management plan	0.186	0.127	0.053	0.006	266.012	16%	−15%
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used							
Maximum	0.586	-	-	-	221.296	−4%	126%
Minimum	0.071	-	-	-	274.893	20%	−66%
Cod MP	0.102	-	-	-	270.986	18%	−52%
SQ effort	0.192	-	-	-	260.239	13%	−13%
Effort_Mgt	0.087	-	-	-	272.841	19%	−59%

Weights in thousand tonnes.

[1)] The landing split between Subarea IV and Division VIId in 2015 is the same as the proportion of landings between the areas in 2013: 79.56% landings from Subarea IV and 20.43% landings from Division VIId. This assumes that management for Division VIId is separate from Subarea VII. Total catches are based on a combined discard rate for Subarea IV and Division VIId.

[2)] SSB 2016 relative to SSB 2015.

[3)] Human consumption for Subarea IV in 2015 relative to TAC for Subarea IV and Division IIa in 2014 (16 092 t).

Mixed-fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.

E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

It is assumed that there is no change in fishing mortality in 2014 relative to 2013. This is based on the fact that there is no reduction in effort ceilings for 2014 compared to 2013.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that total catches should be no more than 28,317 t. Assuming discard and industrial bycatches remain at the same in 2015 as the average of the last 3 years, this implies human consumption landings of no more than 17,190 t. Splitting the human consumption landings according to the proportions of overall landings in in 2013 for IV and VIId separately, implies human consumption landings of 13,678 t in the North Sea and 3,512 t in Division VIId in 2015.

STECF notes that the previous management plan was re-evaluated in 2013 and that the adjusted target F of 0.15 is considered precautionary.

2.10 Anglerfish (*Lophius piscatorius*) in IIa (EU zone), North Sea IV, IIIa

Anglerfish (*Lophius piscatorius*) in IIa, IV and IIIa are assessed together with anglerfish (*Lophius piscatorius* & *Lophius budegassa*) in Subareas VI, XII and XIV. The stock summary and advice is given in Section 3.10.

2.11 Brill (*Scopthalmus rhombus*) in the North Sea

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Brill is mainly caught as a valuable bycatch species in the beam-trawl fisheries targeting flatfish, and to a lesser extent in the otter trawl and fixed-net fisheries. Locally, a minimum landing size of 30 cm is used. Landings in area IV have fluctuated between 1000 t and 1500 t for most of the available time series (1973-2008). In the period 1991-1994 landings between 1700 t and 2400 t have been recorded. In 2012 and 2013 the landings were 1 512t and 1 390t respectively.

A precautionary TAC (including turbot) in areas IIa and IV for 2012, 2013 and 2014 was set to 4 642 t.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: There are no specific management agreements for brill in the North Sea. An EU TAC is set for EU waters of ICES Division IIa and Subarea IV together with turbot (ICES, 2013a).

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

	F (Fishing Mortality)	
	2010–2012	
Qualitative evaluation		Insufficient information
SSB (Spawning-Stock Biomass)		

	2005–2012	
Qualitative evaluation		Stable to increasing

Landings have been relatively stable and above historical values since 1998 and considered a reliable approximation of catches as only little discarding of brill occurs. The stock size indicator (lpue) in the last three years (2010–2012) is 56% higher (North Sea) or 2 % lower (Kattegat) than the average of the five previous years (2005–2009). The survey is noisy and landings and lpue may be also influenced by the turbot uptake of the TAC

RECENT MANAGEMENT ADVICE:

New data (landings and lpue and effort data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: ICES *advises on the basis of the ICES approach to data limited stocks that catches should be no more than 2727 tonnes. All catches are assumed to be landed*.

TACs may not be appropriate as a management tool for bycatch species. Management of turbot and brill under a combined species TAC prevents effective control of the single species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

No analytical assessment can be presented. The main cause of this is lack of biological data. Therefore, fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data limited stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted status-quo catch. The advice is based on a comparison of the three most recent index values with the five preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (lpue) in the last three years (2010–2012) is 56% higher (North Sea) or 2% lower (Kattegat) than the average of the five previous years (2005–2009). Given that the North Sea is the main distribution area, and that the Kattegat survey is noisy but, nevertheless, shows a clear increasing trend in the last fifteen years, this implies an increase of catches of at most 20 % in relation to the last three years average catches, corresponding to catches of no more than 2727 t.

The exploitation status is unknown but effort for the main fleet with brill bycatches (beam trawls) in the North Sea and Skagerrak has declined almost 50% between 2002 and 2012. Therefore, no additional precautionary reduction of catches is needed.

All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015.

STECF considers that while the advice is given for brill in Subarea IV and Divisions IIIa and VIId,e., because around 67% of the brill is caught in the North Sea, the advice is appropriate for the North Sea.

STECF notes that advice for brill in IIIa, IV and VIId is 2727 t. Using the relative proportion of the total landings of brill from IIIa, IV and VIId in 2013 (4% , 67% and 29% respectively) to derive a value for the North Sea alone, implies that catches of brill from the North Sea (Subarea IV) in 2015 should not exceed 1820 t. The advice for turbot in the North Sea (Subarea IV) is that catches in 2015 should be no more than 2406 t. This implies that the combined catches of turbot and brill from Subarea IV (North Sea) in 2015 should not exceed 4,226 t. STECF notes that this value represents a 9% decrease on the agreed TAC for turbot and brill for 2014.

STECF considers that since advice for both brill and turbot in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that brill is mainly a bycatch species in fisheries for plaice and sole. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.12 Dab (*Limanda limanda*) IIa (EU zone), North Sea

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Dab is a bycatch in the fishery for flatfish, shrimp and demersal species, mainly in the beam trawl fisheries. Dab catches are generally discarded based on the availability of target species and market price. Landings in area IV have fluctuated around 7 000t from 1973 until 1983. Between 1984 and 1997 they amounted up to around 4 000t. Since the record high values in the period 1998-2000 of about 13 000t, landings have steadily decreased to 8 029 t in 2008. In 2012 and 2013 the landings were 6 019t and 5 212t respectively.

A precautionary TAC (including flounder) in areas IIa and IV for 2012, 2013 and 2014 was set to 18 434 t.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: No specific management objectives are known to ICES. An EU TAC is set for EU waters of area IIa and IV together with flounder (ICES, 2013a).

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

	F (Fishing Mortality)	
	2010 – 2012	
Qualitative evaluation	?	Insufficient information

	TSB (Total Stock Biomass)	
	2005 – 2012	
Qualitative evaluation	→	Stable in the main area

Landing data are not complete and are not indicative for catches since discard rates are high. Survey indices show a stable abundance in the last decades in Subarea IV which is the main part of the distribution area and an increasing abundance for Division IIIa. The stock size indicator

(number/hour) in the last three years (2010–2012) is 7% higher (North Sea) or 16% higher (Skagerrak–Kattegat) than the average of the five previous years (2005–2009).

RECENT MANAGEMENT ADVICE:

New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 7795 tonnes. Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.*

TACs may not be appropriate as a management tool for bycatch species. Management of dab and flounder under a combined species TAC prevents effective control of the single species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

No analytical assessment can be presented. The main cause of this is lack of reliable catch data. Therefore, fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted status-quo catch. The advice is based on a comparison of the three most recent index values with the five preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (number/hour) in the last three years (2010–2012) is 7 % higher (North Sea) or 16% higher (Skagerrak–Kattegat) than the average of the five previous years (2005–2009). Given that the North Sea is the main distribution area, and that both surveys show an increase, this implies an increase of landings of at most 7% in relation to the last three years average landings, corresponding to landings of no more than 7795 t.

Even though exploitation status is unknown, the effort of the main fleet with dab bycatches (beam trawls) in the North Sea and Skagerrak has declined almost 50% between 2002 and 2012. Therefore, no additional precautionary reduction of catches is needed.

Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015.

STECF considers that while the advice is given for dab in IIIa and North Sea, because around 90% of the dab is caught in the North Sea, the advice is appropriate for the North Sea.

STECF considers that since advice for both dab and flounder in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that the advice for dab for IIIa and IV is that landings in 2015 should be no more than 7,795 t. Using the relative proportion of the total landings of dab from IIIa and IV in 2013 (14% and 86% respectively) to derive a value for the North Sea alone, implies that landings of dab from the North Sea (Subarea IV) in 2015 should not exceed 6,680 t. The advice for flounder for IIIa, and IV is that landings in 2015 should be no more than 3,160 t. Using the relative proportion of the total landings of flounder from IIIa and IV in 2013 (9% and 91% respectively) to derive a value for the North Sea alone, implies that landings of flounder from the North Sea (Subarea IV) in 2015 should not exceed 2,868 t. This implies that the combined landings of dab and flounder from Subarea IV

(North Sea) in 2015 should not exceed 9,548 t. STECF notes that this value represents a 48% decrease on the agreed TAC for dab and flounder for 2014.

STECF notes that dab is mainly a bycatch species in fisheries for plaice and sole. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.13 Flounder (*Platichthys flesus*) - IIa (EU zone), North Sea

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Flounder is a bycatch in the fishery for flatfish and demersal species, mainly in the beam trawl fisheries. Discard rates can vary considerably, depending on availability of the main target species and market price. Landings in area IV have fluctuated around 2 500t from 1973 until 1983 and around 1500t between 1984 and 1997. Since the record high values in 1998 of 5 560t, landings have fluctuated around 3 500t. In 2012 and 2013 the landings were 2 187t and 1 702t respectively.

A precautionary TAC (including dab) in areas IIa and IV for 2012, 2013 and 2014 was set to 18 434 t.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: No specific management objectives are known to ICES. An EU TAC is set for EU waters of area IIa and IV together with dab (ICES, 2013a).

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

F (Fishing Mortality)		
	2010 - 2012	
Qualitative evaluation		Insufficient information

TSB (Total Stock Biomass)		
	2005 – 2012	
Qualitative evaluation		Increase in the main area

The available survey information indicates stable stock abundance since the mid nineties. Landings are declining, with the lowest landings for IIIa in 2012. Landing data are not indicative for catches since discard rates are variable. The stock size indicator (number/hour) for the whole area in the last three years (2010–2012) is 7% higher than the average of the five previous years (2005–2009).

RECENT MANAGEMENT ADVICE:

New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 3160 tonnes. Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.*

TACs may not be appropriate as a management tool for bycatch species. Management of dab and flounder under a combined species TAC prevents effective control of the single species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

No analytic assessment can be presented. The main cause of this is lack of data (exact catches and biological survey results). Therefore, fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted status-quo catch. The advice is based on a comparison of the three most recent index values with the five preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (number/hour, based on the Q1 survey of the whole area) in the last three years (2010–2012) is 7 % higher than the average of the five previous years (2005–2009). This implies an increase of landings of at most 7 % in relation to the last three years average landings, corresponding to landings of no more than 3 160 t.

Even though exploitation status is unknown, the effort of the main fleet with flounder bycatches (beam trawls) in the North Sea and Skagerrak has declined almost 50% between 2002 and 2012. Therefore no additional precautionary reduction of catches is needed.

Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015.

STECF considers that while the advice is given for flounder in IIIa and North Sea, because around 90% of the flounder is caught in the North Sea, the advice is appropriate for the North Sea.

STECF considers that since advice for both flounder and dab in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that the advice for flounder for IIIa, and IV is that landings in 2015 should be no more than 3,160 t. Using the relative proportion of the total landings of flounder from IIIa and IV in 2013 (9% and 91% respectively) to derive a value for the North Sea alone, implies that landings of flounder from the North Sea (Subarea IV) in 2015 should not exceed 2,868 t. The advice for dab for IIIa and , IV is that landings in 2015 should be no more than 7,795 t. Using the relative proportion of the total landings of lemon sole from IIIa and IV in 2013 (14% and 86% respectively) to derive a value for the North Sea alone, implies that landings of dab from the North Sea (Subarea IV) in 2015 should not exceed 6,680 t. This implies that the combined landings of dab and flounder from Subarea IV (North Sea) in 2015 should not exceed 9,548 t. STECF notes that this value represents a 48% decrease on the agreed TAC for dab and flounder 2014.

STECF notes that flounder is mainly a bycatch species in fisheries for plaice and sole. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.14 Lemon sole (*Microstomus kitt*) in the North Sea

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Lemon sole are generally caught in mixed fisheries by beam trawlers and otter trawlers. There is no minimum landing size for lemon sole. Landings in area IV have fluctuated between 5 000 t and 8 000t in the period 1973-2001. Since then, landings have been stable just below 4 000t. In 2012 and 2013 the landings were 2 119t and 2 981t respectively.

A precautionary TAC (including witch) in areas IIa and IV for 2012, 2013 and 2014 was set to 6 391 t.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: No specific management objectives are known to ICES. An EU TAC is set for EU waters of ICES Division IIa and Subarea IV together with witch (ICES, 2013a).

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

	F (Fishing Mortality)	
	2010–2012	
Qualitative evaluation		Insufficient information

	TSB (Total Stock Biomass)	
	2005–2012	
Qualitative evaluation		Increasing

Landing data show a declining long-term trend. The available survey information indicates mature biomass is variable and has been at a high level for the last 20 years. The stock size indicator (gr/hour) in the last three years (2010–2012) is 16% higher than the average of the five previous years (2005–2009).

RECENT MANAGEMENT ADVICE:

New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 4350 tonnes. Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.*

TACs may not be appropriate as a management tool for bycatch species. Management of lemon sole and witch under a combined species TAC prevents effective control of the single species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

No analytic assessment can be presented. The main cause of this is lack of data (e.g. age, effort, and cpue data for countries that take the majority of landings). Therefore, fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data limited stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted status-quo catch. In this case, the advice is based on a comparison of the three most recent index values with the five preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (number/hour, based on the Q1 survey of the whole area) in the last three years (2010–2012) is 16% higher than the average of the five previous years (2005–2009). This

implies an increase of landings of at most 16% in relation to the last three years average landings, corresponding to landings of no more than 4350 t.

Even though exploitation status is unknown, the effort of the main fleet with lemon sole bycatches (otter trawls) in the North Sea and Skagerrak has declined by 14% (TR1) and 45% (TR2) between 2004 and 2012. Therefore no additional precautionary reduction of catches is needed.

Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015.

STECF considers that since advice for both lemon sole and witch in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that the advice for lemon sole for IIIa, IV and VIId is that landings in 2015 should be no more than 4350 t. Using the relative proportion of the total landings of lemon sole from IIIa, IV and VIId in 2013 (8% , 79% and 13% respectively) to derive a value for the North Sea alone, implies that landings of lemon sole from the North Sea (Subarea IV) in 2015 should not exceed 3447 t. The advice for witch for IIIa, IV and VIId is that landings in 2015 should be no more than 1574 t. Using the relative proportion of the total landings of witch from IIIa, IV and VIId in 2013 (53% , 50% and 0.1% respectively) to derive a value for the North Sea alone, implies that landings of witch from the North Sea (Subarea IV) in 2015 should not exceed 784 t. This implies that the combined landings of lemon sole and witch from Subarea IV (North Sea) in 2015 should not exceed 4,231 t. STECF notes that this value represents a 34% decrease on the agreed TAC lemon sole and witch for 2014.

2.15 Megrim (*Lepidorhombus whiffiagonis*) in IIa (EU zone), North Sea

Megrim in IIa and IV are assessed together with megrim in Subarea Vb (EU Zone), VI. XII and XIV. The stock summary and advice is given in Section 3.12.

2.16 Plaice (*Pleuronectes platessa*) in Kattegat and Skagerrak (Division IIIa)

ICES has revised the stock definition for plaice in the Kattegat and the Skagerrak. Plaice in the Skagerrak is now assessed as a separate stock while plaice in the Kattegat is assessed together with plaice in subdivisions 22 and 23.

2.16.1 Plaice (*Pleuronectes platessa*) in the Skagerrak

FISHERIES: Plaice is caught all year round with predominance from spring to autumn. The plaice catches in this area are taken in fisheries using seine, trawl and gill nets targeting mixed species for human consumption. Plaice is an important by-catch in a mixed cod-plaice fishery. Denmark and Sweden and Norway account for the majority of the landings while only minor landings are taken the German and, occasionally, vessels from Belgium and the Netherlands. Since the late seventies landings fluctuated between 6000 and 14 000 t. Landings in 2011, 2012 and 2013 are estimated to be 8 300 t, 7 600 t and 6800 t respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is an age-based analytical assessment of the Skagerrak and North Sea combined and is based on an updated version of indices of local adult aggregation during spawning as a monitoring of local abundance.

MANAGEMENT AGREEMENT: There are no specific management agreements for plaice in the Skagerrak.

REFERENCE POINTS: No reference points have been defined.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	West → East ↗	West: Fluctuating around mean East: increasing over historical low

Plaice in Skagerrak is considered to have two components: Eastern and Western, the latter of which is mixed with the North Sea stock. A combined assessment of the Skagerrak with the North Sea stock shows a consistent upward scaling of the total spawning stock biomass. A biomass index suggests that, in recent years, the Western component has been fluctuating around the long term average, and that the Eastern component is increasing from the historical low. Fishing mortality is unknown, but effort has been substantially reduced.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the data-limited approach that catches should be no more than 7 232 tonnes. If discard rates do not change from the average of the last two years (2012-2013), this implies landings of no more than 6 287 tonnes. In the Eastern Skagerrak, no directed fisheries should occur and bycatch and discards should be minimized.

Other considerations

No reliable assessment can be presented for this stock. The main cause of this is that stock identity is uncertain and mixing with North Sea plaice is assumed to occur. Therefore, no forecast can be presented.

ICES approach to data-limited stocks

For data-limited stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. This year advice is based on an estimation of the most recent trends in survey index values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

Area-based IBTS Q1 indices are uncertain and variable around their mean because of the limited number of hauls in the Skagerrak. Therefore trends are estimated based on the average of the last three years compared to the previous five years rather than ICES DLS standard last two compared to previous three years to limit the influence on the advice of the noise in the survey data.

For the Western component (where nearly all catches take place) the biomass index in the last three years (2012–2014) is 13% lower than the average of the five previous years (2007–2011). This

implies a decrease of catches of at most 13% in relation to the last two years average catches (=8 313 t), corresponding to catches of no more than 7232 t in 2015.

Even though exploitation status is unknown, the effort of the main fleets with plaice catches has declined substantially. For trawling and Danish seines (mesh sizes above 90 mm) a reduction of effort of 45% was recorded in Skagerrak between 2003 and 2013. Therefore no additional precautionary reduction of catches is needed.

If discards ratios do not change from the average of the last two years (2012-2013) at 13%, this implies landings of no more than 6287 t. Discard mortality is assumed to be 100%.

The Eastern component, which was previously considered depleted has shown higher indices over the last two years. The biomass index in the last three years (2012–2014) is 69% higher than the average of the five previous years (2007–2011). Catches in the Eastern area are very low (under 1.5% of the Skagerrak landings since 2010), and the fisheries operate with selective devices. However, the stock size in relation to any reference point remains unknown. Therefore, no directed fisheries should occur and bycatch and discards should be minimized in the eastern Skagerrak.

Alternative options for potential interim management plans

Since 2013, EU and Norway and the North Sea RAC have considered further options for an interim management plan for plaice in Skagerrak, on the basis of the links between this stock and North Sea Plaice (Annex 6.3.17). This work is based on ICES feedback on an EU-Norway request on this topic (ICES, 2012a). ICES concluded that such a strategy could potentially form the basis of an *interim* harvest control rule until the biological knowledge on the stocks structure is consolidated.

In 2012 ICES considered that a pragmatic harvest control rule could be used indexing the Skagerrak TAC to either;

a) Changes in the North Sea TAC or
b) Changes in SSB of the combined assessment.

These options could potentially form the basis of an *interim* management plan, with provisions explicitly linked to a monitoring of the dynamics in local components within Skagerrak (ICES, 2012a and Appendix 6.3.17.4).

The SSB estimated from the combined assessment increased by 10% between 2012 and 2013 and is well above MSY Btrigger for the North Sea stock. The West Skagerrak survey index is variable without a trend. Therefore the TAC in the Skagerrak would remain at the same level as in 2014 (10 056 tonnes landings, 11 544 tonnes catches).

This interim harvest control rule should be reconsidered after the next benchmark of the assessment in 2015.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should be no more than 7232 t. However, the advice for in the Eastern Skagerrak is that no directed fisheries should occur and bycatch and discards should be minimized. STECF interprets this to mean that in 2015, catches of plaice from the Eastern Skagerrak should be reduced to the lowest possible level.

STECF notes that fisheries for plaice in Division IIIa are linked to those exploiting sole and that this linkage should be taken into account when implementing management rules for either stock.

2.16.2 Plaice (*Pleuronectes platessa*) in the Kattegat and subdivisions 22 and 23.

STECFs review of ICES advice for Kattegat and subdivisions 22 and 23 is given in Part 1 of the STECF review of advice for 2014 (STECF 14-10).

2.17 Plaice (*Pleuronectes platessa*) in Subarea IV (North Sea)

FISHERIES: North Sea plaice is taken mainly in a mixed flatfish fishery by beam trawlers in the southern and south eastern North Sea with a minimum mesh size of 80 mm. This mesh size catches plaice under the minimum landing size of 27 cm, which induces high discard rates (in the range of 50% by weight). Directed fisheries are also carried out with seine and gill net, and by beam trawlers in the central North Sea with a minimum mesh size of 100 - 120 mm depending on area. Fleets involved in this fishery are the Netherlands, UK, Belgium, Denmark, France, Germany and Norway. Landings fluctuated between 70 000 and 170 000 t (1987-2002) and are predominantly taken by EU fleets. Landings in 2008 reached a record low of 48 900 t. The 2013 landings are 78 900 t.

The combination of days-at-sea regulations, high oil prices, and the decreasing TAC for plaice and the relatively stable TAC for sole, appear to have induced a more southern fishing pattern in the North Sea. This concentration of fishing effort results in increased discarding of juvenile plaice that are mainly distributed in those areas. This process could be aggravated by movement of juvenile plaice to deeper waters in recent years where they become more susceptible to the fishery. Also the lpue data show a slower recovery of stock size in the southern regions that may be caused by higher fishing effort in the more coastal regions.

The increased use of new gears such as “SumWing” and electric “pulse trawls” will increasingly affect catchability and selectivity of plaice and sole. ICES considered that pulse trawls experienced lower catch rates (kg hr−1) of undersized sole and higher catch rates of marketable sole, compared to standard beam trawls (ICES, 2006, 2012d). Plaice catch rates decreased for all size classes. Since 2009, Dutch fishers have started using pulse trawls. In 2011, approximately 30 derogation licenses for pulse trawls were operational in the Netherlands, increasing to 42 in 2012. At the end of 2013, there were 42 derogation licenses available, of which 39 were in use by flatfish vessels. Debate is ongoing in the EU about possible amendments to EU regulations that would permanently legalize the use of pulse gears for the whole fleet. The introduction of innovative gears may lead to changes in how the ecosystem is impacted by the plaice and sole targeting fleet. Because of the lighter gear and lower towing speed, pulse vessels generate a lower swept-area per hour and reduced bycatch of benthic organisms. The new gears may change fishing patterns as well.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment using landings and discards, calibrated with three survey indices.

MANAGEMENT AGREEMENTS: The management agreement (1999), previously agreed between the EU and Norway was not renewed for 2005 and since that year has not been in force. A multiannual plan for fisheries exploiting stocks of plaice and sole in the North Sea was established on 11 June 2007 (Council Regulation (EC) No 676/2007). This plan has two stages. The first stage aims at an annual reduction of fishing mortality by 10% in relation to the fishing mortality estimated for the preceding year, with a maximum change in TAC of +or- 15% until the precautionary reference points are reached for both plaice and sole in two successive years. ICES has interpreted the F for the preceding year as the estimate of F for the year in which the assessment is carried out. The basis for this F estimate in the preceding year will be a constant application of the procedure used by ICES in 2007. In the second stage, the management plan aims for exploitation at F = 0.3.

The current plan prescribes effort limitations (kW-days per metier) to be adjusted in line with changes in fishing mortality. In 2012, ICES evaluated a proposal by the Netherlands for an amended management plan, which could serve as the "stage 2" plan (Coers *et al.*, 2012). The amendments included changing the target F for sole and to cease reductions of effort when the stocks are within safe biological limits. ICES concluded that the plan – subject to those amendments – is consistent with the precautionary approach and the principle of maximum sustainable yield (ICES, 2012a).

In 2013, the effects of interannual quota flexibility in the management plan for plaice and sole were evaluated (ICES, 2013b). ICES concluded that the multiannual management plan is robust to inclusion of an interannual quota flexibility of 10% in terms of the probability of the stock biomass falling below B_{lim}, and average yield. This conclusion is conditional on the interannual quota flexibility being suspended when the stock is estimated to be outside safe biological limits.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management Plan	SSB_{MP}	230 000 t	Stage one: Article 2.
	F_{MP}	0.6 0.3	Stage one: Article 2; Stage two: Article 4.
MSY Approach	MSY $B_{trigger}$	230 000 t	Default to value of B_{pa}.
	F_{MSY}	0.25	Simulation studies and equilibrium analyses taking into account a number of possible stock–recruitment relationships (range of 0.2–0.3).
Precautionary approach	B_{lim}	160 000 t	B_{loss} = 160 000 t, the lowest observed biomass in 1997 as assessed in 2004.
	B_{pa}	230 000 t	Approximately 1.4 B_{lim}.
	F_{lim}	0.74	F_{loss} for ages 2–6.
	F_{pa}	0.60	5th percentile of F_{loss} (0.6) and implies that $B_{eq}>B_{pa}$ [1)] and a 50% probability that $SSB_{MT} \sim B_{pa}$.

(Last changed in: 2011)

STOCK STATUS:

	Fishing pressure			
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MP})	✓	✓	✓	Below target

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓	Above target

The stock is well within precautionary limits, has increased in the past ten years, and reached a record-high level in 2014. Recruitment has been around the long-term average since the mid-2000s. In recent years, fishing mortality has been estimated below F_{MSY} and below the target specified in the management plan.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the second stage of the EU management plan (Council Regulation No. 676/2007) that catches should be no more than 179 301 t. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 128 376 t.

Other considerations

Management plan

The North Sea plaice and sole stocks have both been within safe biological limits in the last three years, which means that the stocks are presently in stage two of the EU multiannual plan (STECF, 2014). Application of stage two of the plan is based on transitional arrangements until an evaluation of the plan has been conducted (as stipulated in article 5 of the EC regulation).

Following the EU multiannual plan stage 2 would imply fishing at the target rate of 0.3, which results in a TAC (landings) increase of more than 15%. Therefore, the maximum TAC increase of 15% is applied, resulting in catches of no more than 179 301 t. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 128 376 t. This is expected to lead to an SSB of 735 259 t in 2016.

ICES has evaluated this management plan and considers it to be precautionary (ICES, 2010).

MSY approach

Following the ICES MSY approach implies an increase in fishing mortality to 0.25, resulting in catches of 158 411 t in 2015. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 113 345 t. This is expected to lead to an SSB of 756 215 t in 2016.

Precautionary approach

The fishing mortality in 2014 should be no more than F_{pa} (0.6), corresponding to catches of no more than 329 924t in 2015. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 237 478 t. This is expected to keep SSB above B_{pa} in 2016.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings

corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

Rationale	**Catch (2014)**	**Landings (2014)[3]**	**Basis**	**F(2–6) Total (2014)**	**F(2–6) HC (2014)**	**F(2–3) Disc (2014)**	**Disc. (2014)**	**SSB (2015)**	**% SSB change[1])**	**%TAC change[2])**
Management plan	179301	128376	TAC + 15%	0.287	0.15	0.25	51380	735259	0	15
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used										
Maximum	279520	199978	A	0.51	-	-	79542	608786	−17	79
Minimum	75325	53520	B	0.11	-	-	21805	812718	11	−52
Cod_ MP	84667	60175	C	0.13	-	-	24492	803339	10	−46
SQ effort	151503	107902	D	0.25	-	-	43601	736365	1	−3
Effort_Mgt	118610	84387	E	0.19	-	-	34223	769298	5	−24

Weights in thousand tonnes.

1) Landings of plaice in Subarea IV, calculated as the projected total stock landings less the landings of plaice from Subarea IV in Division VIId. The subtracted value (528 t) is estimated based on the plaice catch advice for Division VIId for 2014, using the recent 3-year average (2011–2013) proportion of the Subarea IV plaice stock in the annual plaice landings in Division VIId. TAC change restrictions of 15% are applied after subtracting the Division VIId catches.

2) SSB2016 relative to SSB 2015.

3) Landings 2015 relative to TAC 2014.

Mixed-fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

It is assumed that there is no change in fishing mortality in 2014 relative to 2013. This is based on the fact that there is no reduction in effort ceilings for 2014 compared to 2013.

Additional considerations

Management considerations

Both sole and plaice stocks in the North Sea have been within safe biological limits for a number of consecutive years. Therefore ICES considers that the management plan is now in the second stage, which implies that the stocks should be managed on the basis of MSY (article 4.1). The management plan specifies that fishing mortality for plaice in the second stage should not be set below the target of 0.3 (article 4.2); the current advice for plaice is therefore based on this objective. Taking into account the procedures for setting the TAC for plaice (article 7) the TAC advice for 2015 is based on a maximum change of 15%.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that that catches should be no more than 179 301 t. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 128 376 t. This advice is conditional on whether ICES and STECF have correctly interpreted the provisions of the stage 2 of the agreed management plan (Council Regulation 676/2007).

STECF notes that in the assessment of plaice in the North Sea, ICES has taken into account information on migration of plaice between the North Sea and VIId. Similar information relating to movement of plaice between the North Sea and the Skagerrak has not been taken into account.

STECF notes that there are more northerly areas of the North Sea where concentrations of plaice are much higher than sole. North of 56°N (Council Reg. 2056/2001) the mandatory 120mm mesh nets will catch plaice with negligible sole catches. A fishery to take plaice independently of sole is therefore possible in these more northerly areas of the North Sea.

2.18 Plaice (*Pleuronectes platessa*) in Division VIId (Eastern English Channel)

FISHERIES: Countries involved in this fishery are Belgium, France and the UK. Plaice is mainly caught in 80 mm beam-trawl (Belgian and English) fisheries for sole or in mixed demersal fisheries using otter trawls (mainly French). There is also a directed fishery during parts of the year by inshore trawlers and netters. Fisheries operating on the spawning aggregation in the beginning of the year catch plaice that originate from the North Sea, Divisions VIId and VIIe components. Since the 80 mm mesh size does not match the minimum landing size for plaice (27 cm), a large number of undersized plaice are discarded, but no discard time-series is available yet. Landings fluctuated between 2 000 and 10 000 t (1976-2007). Landings fluctuated hardly in the last decade but declined slightly from 5 800 t in 2002 to 3 600 t in 2012. The landings in 2013 are 4100 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment using commercial and survey data.

MANAGEMENT AGREEMENT: There are no specific management agreements for plaice in the Eastern Channel.

REFERENCE POINTS:

	Type	***Relative Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Undefined.	
	F_{MSY}	0.27	Proxy based on F_{MSY}, relative to the average time series in 2014. F_{MSY} Computed with EqSim based on the current assessment and the Hockey stick relationship
Precautionary approach	Not defined.		

(Last changed in: 2014)

STOCK STATUS:

Fishing pressure				
	2011	**2012**	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Unknown
Stock size				

	2012	2013	2014	
MSY ($B_{trigger}$)	?	?	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	?	?	Unknown
Qualitative evaluation	↗	↘	↗	Increasing

Fishing mortality has declined since the mid-1990s and is presently among the lowest in the time-series. Spawning-stock biomass has increased since 2003 and is currently around the highest level.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the data-limited approach, but cannot quantify the resulting catches. The implied landings of the Division VIId plaice stock should be no more than 2657 t. Assuming the same proportion of the Division VIIe and Subarea IV plaice stocks is taken in Division VIId as during the last decade (2001-2012), this will correspond to total landings of plaice in Division VIId of no more than 3279 tonnes.

Other considerations

ICES approach to data limited stocks

For data-limited stocks with analytical assessment and forecast that are only treated qualitatively, ICES uses a short-term forecast using the F_{MSY} proxy (or lower, if stock biomass is estimated to be below MSY $B_{trigger}$). A change limit of ±20% is applied to the advice.

Since MSY $B_{trigger}$ has not been identified for this stock, the ICES MSY approach has been applied without consideration of SSB in relation to MSY $B_{trigger}$, and the method has been applied based directly on the F_{MSY} proxy. For VIId plaice, this implies fishing mortality should be reduced to 0.27, resulting in landings of plaice in VIId of no more than 3279 t in 2015, which is a decrease of more than 20% in relation to the 2013 landings. A change limit of ±20% (uncertainty cap) is applied in the data-limited stock advice. ICES cannot quantify the resulting catches, but the implied landings should be no more than 2657 t for Division VIId plaice, and 3279 t for plaice in Division VIId (including plaice originating from the North Sea and Western English channel). This is expected to lead to an SSB increase of 22% in 2016.

Discards are known to take place in the order of 30-40% of the plaice catches in the last 3 years (2011 to 2013).

Mixed fisheries

Mixed fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

The “minimum”, “cod” and “Effort Management” scenarios of the mixed-fisheries analyses are consistent with the single-species advice for eastern channel plaice. It is noted that in the “max” and “SQ effort” scenario, the implied F would exceed F_{msy}.

Rationale	Landings Div. VIId plaice stock (2015)	Landings plaice in Div. VIId (2015) [2)]	Basis	Relative F landings (2015)	%SSB change [3)]	% Landings change plaice VIId stock [4)]	% Landings change plaice in VIId [5)]
DLS approach	2657	3279	Uncertainty cap 20% landing reduction	0.33	22	-20	-20
Mixed fisheries options *– minor differences with calculation above can occur due to different methodology used (ICES, 2014c)*							
Maximum	5433	-	A	0.75	0	-	104%
Minimum	1542	-	B	0.18	38	-	-42%
Cod_ MP	1819	-	C	0.21	35	-	-32%
SQ effort	3145	-	D	0.38	22	-	18%
Effort_Mgt	2555	-	E	0.31	28	-	-4%

Weights in tonnes.

[1)] Based on the recent average proportion of the TAC for VIIde landed in VIId (77%, last 11 years average).

[2)] Landings of all plaice in VIId including plaice originating from the North Sea and Western English Channel, according to a ratio calculated over the last 11 years (2001-2012)

[3)] SSB 2016 relative to SSB 2015.

[4)] Landings of VIId plaice in 2015 relative to ICES estimates of landings in 2013

[5)] Landings of plaice in VIId 2015 relative to ICES estimates of landings in 2013

Mixed-fisheries assumptions:

A. Maximum scenario: Fleets stop fishing when the last quota is exhausted.
B. Minimum scenario: Fleets stop fishing when the first quota is exhausted.
C. Cod management plan scenario: Fleets stop fishing when the cod quota is exhausted.
D. SQ effort scenario: Effort in 2014 and 2015 as in 2013.
E. Effort management scenario: Effort reductions according to cod and flatfish management plans.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the assessment and advice is for plaice in ICES Division VIId but management is for plaice in ICES Divisions VIId and VIIe combined. The combined advice for plaice in VIId and VIIe is for landings in 2015 of no greater than 4 597 t, which represents a 13% decrease on the estimated average landings of plaice from these areas over the last 3 years and a 14% decrease compared to the agreed TAC for 2014 for VIId and VIIe.

STECF reiterates its previous comment that due to the minimum mesh size (80 mm) in the mixed beam trawl fishery, a large number of undersized plaice are discarded. Discard estimates are not included in the assessment. The 80-mm mesh size is not matched to the minimum landing size of plaice (27 cm). Measures taken specifically directed at sole fisheries will also impact the plaice fisheries.

2.19 Sole (*Solea solea*) in Division IIIa

FISHERIES: The fishery is mainly conducted by Denmark, with smaller landings taken by Germany and Sweden. Sole is taken in a mixed trawl fishery with Nephrops, plaice, and cod, the main season being in autumn–winter. In addition there is a directed gillnet fishery for sole, mainly in Skagerrak in spring and summer. Landings fluctuated between 200 t and 1,400 t (1971-2007). In 2011, 2012 and 2013 landings were 552 t, 358 t and 332 t respectively.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The advice is based on an age-based assessment using SAM with cpue data from three commercial tuning series (reference fleets) and one scientific survey series. The discontinuation of cooperative Fishermen–DTU Aqua sole survey in 2012 increased the assessment uncertainty especially with regard to recruitment estimations. The survey was the only source for recruitment observations. During the period 2002–2004 there was considerable misreporting due to limiting TACs and weekly quota, which were included in the assessment. Since mid-2005, the increase in TAC and improved control are believed to have resulted in insignificant misreporting.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY	MSY $B_{trigger}$	2000 t.	Lowest observed SSB, excluding low SSBs in 1984–1985 (ICES, 2010).
Approach	F_{MSY}	0.32	Equilibrium scenarios constrained by prob(SSB<B_{lim})<5% w. stochastic recruitment (WKMSYREF2, ICES, 2014b).
Precautionary Approach	B_{lim}	1200 t.	B_{loss} and segmented regression (WKMSYREF2 2014, ICES, 2014b).
	B_{pa}	2000 t	$B_{lim} \times e^{1.645\sigma}$, σ=0.30 (WKMSYREF2 2014, ICES, 2014b).
	F_{lim}	0.92	F_{lim} replacement line. Consistent with B_{lim} (WKMSYREF2 2014, ICES, 2014b).
	F_{pa}	0.49	B_{pa} replacement line. Consistent with B_{pa} and F_{lim} (WKMSYREF2 2014, ICES, 2014b).

(Last changed in: 2014).

STOCK STATUS:

F (Fishing Mortality)				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably

SSB (Spawning-Stock Biomass)				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	o	✗	✗	Reduced reproductive capacity

SSB has decreased since 2006 and is below Blim since 2013. Fishing mortality has been relatively stable and above FMSY since 2005. The last strong year class was the 2000 year class; since then recruitment has decreased to a historical low.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 211 tonnes. If discard rates do not change from last year (2013), this implies landings of no more than 205 tonnes.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.20 (lower than F_{MSY} because SSB in the beginning of 2015 is 38% below MSY $B_{trigger}$), which implies catches of no more than 211tonnes in 2015. If discards rates do not change from last year (2013), this implies landings of no more than 205 tonnes. This is expected to lead to an SSB of 1590 tonnes in 2016.

Precautionary approach

Even a zero catch in 2015 is not expected to result in SSB reaching B_{pa} in 2016.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

With regards to the introduction of a landing obligation in the Skagerrak STECF notes that a landing obligation for sole will first enter into force in 2015.

2.20 Sole (*Solea solea*) in Sub-area IV (North Sea)

FISHERIES: Sole is mainly taken by beam trawl fleets in a mixed fishery for sole and plaice in the southern part of the North Sea. A relatively small part of the catch is taken in a directed fishery by gill-netters in coastal areas, mostly in the 2nd quarter of the year. The stock is exploited predominantly by The Netherlands with smaller landings taken by Belgium, Denmark, France, Germany and the UK. Landings have fluctuated between 11,000 and 35 000 t (1957-2007). The landings in 2011, 2012 and 2013 are around 11 500 t, 11 600 t and 13 100 t.

The increased use of "SumWing" and electric "Pulse trawls" will increasingly affect catchability and selectivity of North Sea sole. In 2011, approximately 30 derogation licenses for Pulse trawls were taken into operation, which increased to 42 in 2012 and 2013. Debate is ongoing in the EU about extensions of an additional 42 derogation licenses as well as possible amendments to EU regulations which would permanently legalize the use of pulse gears. ICES concluded that the introduction of electric pulse systems could significantly reduce fishing mortality of target and non-target species, including benthic organisms, assuming there is no corresponding increase in unaccounted (avoidance) mortality. However, not all relevant issues (such as delayed mortality and long-term population effects) have been fully studied and ICES therefore considers that the available data are insufficient to recommend the large-scale use of electric pulse trawl in fisheries.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment using XSA with one commercial index and two survey indices.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management plan	SSB_{MP}	35 000 t	Stage one: Article 2.
	F_{MP}	0.4 0.22	Stage one: Article 2; Stage two: Article 4.3 – F_{MSY}.
MSY	MSY $B_{trigger}$	35 000 t	Default to value of B_{pa}.

approach	F_{MSY}	0.22	Median of stochastic MSY analysis assuming a Ricker stock–recruit relationship (range of 0.2–0.25).
Precautionary approach	B_{lim}	25 000 t	B_{loss}
	B_{pa}	35 000 t	$B_{pa}1.4 \times B_{lim}$
	F_{lim}	Not defined.	
	F_{pa}	0.4	F_{pa} = 0.4 implies $B_{eq} > B_{pa}$ and $P(SSB < B_{pa}) < 10\%$.

(last changed in: 2011)

MANAGEMENT AGREEMENTS: A multiannual plan for plaice and sole in the North Sea was adopted by the EU Council in 2007 (Council Regulation (EC) No. 676/2007) which describes two stages: a recovery plan during its first stage and a management plan during its second stage. The long-term management plan for plaice and sole in the North Sea specifies two distinct phases. The objective of stage one of the flatfish management plan was to bring both sole and plaice stocks within safe biological limits. This objective has been achieved for both stocks. The management plan foresees a re-evaluation of the biological objectives and introduction of economic and social objectives after stage one is completed. The management plan states that when stage one is completed, the Council shall decide on the basis of a proposal from the Commission on the amendment of Articles 4(2) and 4(3) and the amendment of Articles 7, 8, and 9 that will, in the light of the latest scientific advice from the STECF, permit the exploitation of the stocks at a fishing mortality rate compatible with maximum sustainable yield.

ICES considers that the management plan is presently in stage two but the implementation at this stage has not yet been fully defined.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Just above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MP})	✓	✓	✓	Appropriate

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓	Above target

SSB has been increasing since 2007 and is estimated to be above B_{pa} in 2014. Fishing mortality has declined since 1995 and is estimated to be just above F_{MSY} in 2013.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the second stage of the EU management plan (Council Regulation No. 676/2007) but cannot quantify the resulting catches. The implied landings should be no more than 10,973 t.

Other considerations

Management plan

The North Sea plaice and sole stocks have both been within safe biological limits in the last three years, which means that the stocks are presently in stage two of the EU multiannual plan (STECF, 2014). Application of stage two of the plan is based on transitional arrangements until an evaluation of the plan has been conducted (as stipulated in Article 5 of the EC regulation).

In stage two, the EU multiannual plan calls for management in line with the principles of MSY. ICES considers F_{MSY} to be 0.22. Following the EU multiannual plan stage two therefore implies fishing mortality to be reduced to 0.22, which results in a TAC (landings) reduction of less than 15%. ICES cannot quantify the resulting catches. The implied landings should be no more than 10 973 t. Discards are known to take place in the order of an additional 20% of the landings in the last three years (2011–2013).

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.22 (F_{MSY}, as SSB 2012 >MSY $B_{trigger}$). ICES cannot quantify the resulting catches. The implied landings should be no more than 10 973 t. Discards are known to take place in the order of 20% of the landings of sole in the last three years (2011–2013). This is expected to lead to an SSB of 53 800 t in 2016.

Precautionary approach

The fishing mortality in 2015 should be no more than F_{pa} = 0.4. ICES cannot quantify the resulting catches. The implied landings should be no more than 18.200 t. Discards are known to take place in the order of an additional 20% of the landings in the last three years (2011–2013). This is expected to keep SSB above B_{pa} in 2016.

Mixed fisheries

Mixed-fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed-fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single-species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

The "Maximum", "*status quo* effort", and "effort management" scenarios all lead to an overestimate of the North Sea sole TAC in 2015, while the "Minimum" and "Cod MP" scenarios lead to an underestimate.

Rationale	**Landings (2014)**	**Basis**	**F landings (2014)**	**SSB (2015)**	**%SSB change** [1)]	**%TAC change** [2)]
Management plan	10 973	Stage two: $-F_{MSY}$	0.22	53 783	+23	−8
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used (ICES, 2013b)						
Maximum	18.156	A	0.40	46.333	+6	+53
Minimum	6.211	B	0.12	58.793	+34	−48
Cod_MP	6.469	C	0.12	58.524	+34	−46
SQ effort	11.460	D	0.23	53.306	+22	−4
Effort_Mgt	11.328	E	0.23	53.444	+22	−5

Weights in thousand tonnes.
[1)] SSB 2016 relative to SSB 2015.
[2)] Human Consumption landings 2015 relative to TAC 2014.

Mixed fisheries assumptions

A. Maximum scenario: Fleets stop fishing when last quota exhausted
B Minimum scenario: Fleets stop fishing when first quota exhausted
C Cod management plan scenario: Fleets stop fishing when cod quota exhausted
D SQ effort scenario: Effort in 2014 and 2015 as in 2013
E Effort management scenario: Effort reductions according to cod and flatfish management plans

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

2.21 Sole (*Solea solea*) in Division VIId (Eastern English Channel)

FISHERIES: The main fleets, fishing for sole in Division VIId, are Belgian and English offshore beam trawlers (> 300 HP), which also take plaice as a by-catch. These fleets also operate in other management areas. French offshore trawlers targeting roundfish also take sole as a by-catch. Also numerous inshore < 10 m boats on the English and French coasts target sole in the spring and autumn mainly using fixed nets. Between 1986–1997, the total landings have been fluctuating around 4,500t. In 1998 the lowest landings were observed (3,400t), since 2000 the landings have increased to 5,000t in 2003 and fluctuated around that high value for the next 10 years. Landings in 2013 were 4,390 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	8000 t	B_{pa}
	F_{MSY}	0.29	Stochastic simulations assuming a smooth hockey-stick relationship.
Precautionary approach	B_{lim}	Not defined.	Poor biological basis for definition.
	B_{pa}	8000 t	This is the lowest observed biomass at which there is no indication of impaired recruitment. Smoothed B_{loss}.
	F_{lim}	0.55	F_{loss}, but poorly defined; analogy to North Sea and setting of 1.4 F_{pa} = 0.55. This is a fishing mortality at or above which the stock has shown continued decline.
	F_{pa}	0.4	Between F_{med} and 5th percentile of F_{loss}; SSB>B_{pa} and probability (SSB_{mt}<B_{pa}), 10%: 0.4.

(last changed in: 2010)

STOCK STATUS:

	Fishing pressure		
	2011	2012	**2013**

MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	o	o	o	Increased risk

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning-stock biomass has fluctuated without trend and is above MSY $B_{trigger}$ since 2002. Fishing mortality has always been above F_{MSY}, and has been above F_{pa} since 2005. Recruitment has been fluctuating without trend. Recruitment in 2012 and 2013 are the lowest of the time series.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach but cannot quantify the resulting catches. The implied landings should be no more than 1 931 t.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.27 (below F_{MSY} because SSB in 2015 is below MSY $B_{trigger}$: F_{MSY}*(SSB_{2015}/MSY $B_{trigger}$) = 0.29* (7394/8000) = 0.27). ICES cannot quantify the resulting catches. The implied landings should be no more than 1 931 t. Discards are known to take place in the order of an additional 10% of the landings in the last 3 years (2011-2013). This is expected to lead to an SSB of 9 065 t in 2016.

PA approach

The fishing mortality in 2015 should be no more than $F_{pa.}$ This is expected to keep SSB above B_{pa} in 2016. ICES cannot quantify the resulting catches. The implied landings should be no more than 2 706 t. Discards are known to take place in the order of an additional 10% of the landings in the last 3 years (2011-2013).

Mixed fisheries

Mixed fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

Under the ‘cod’ and ‘minimum’ scenario, the sole VIId catch option could not be fully utilized. The ‘max’, ‘SQeffort’ and ‘Effort_Mgt’ scenario implies a Fishing mortality that would exceed F_{pa}, and is not considered precautionary.

Rationale	**Catches (2014)**	**Basis**	**F(2014)**	**SSB(2015)**	**%SSB change** [1)]	**%TAC Change** [2)]
MSY approach	1 931	F_{MSY}*	0.27	9 065	23%	-60%

		(SSB_{2015}/MSY $B_{trigger}$)				
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used (ICES, 2014b)						
Maximum	4 323	A	0.77	6 215	-16%	-11%
Minimum	1 606	B	0.23	9 136	24%	-67%
Cod_ MP	1 790	C	0.26	8 936	21%	-63%
SQ effort	3 008	D	0.47	7 624	3%	-38%
Effort_Mgt	2 758	E	0.43	7 893	7%	-43%

Weights in thousand tonnes.
[1)] SSB 2016 relative to SSB 2015.
[2)] Human Consumption landings 2015 relative to TAC 2014.

Mixed fisheries assumptions

A. Maximum scenario: Fleets stop fishing when last quota exhausted
B Minimum scenario: Fleets stop fishing when first quota exhausted
C Cod management plan scenario: Fleets stop fishing when cod quota exhausted
D SQ effort scenario: Effort in 2014 and 2015 as in 2013
E Effort management scenario: Effort reductions according to cod and flatfish management plans

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

2.22 Turbot (*Psetta maxima*) in Division IIIa

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Turbot is a valuable bycatch in the fishery for flatfish and demersal species and takes place with beam trawls, otter trawl and static gear. In IIIa a target fisheries for turbot probably only occurred before 1960s when the stock was large, while today turbot is only caught as by-catch in the trawl and gillnet fisheries. ICES estimate of landings in 2013 is 111 tonnes which is around the same as in 2011 and about half of the 2012 landings estimate. Discards are considered negligible.

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

F (Fishing Mortality)		
	2010 - 2012	
Qualitative evaluation	?	Insufficient information
TSB (Total Stock Biomass)		
	2005 – 2012	
Qualitative evaluation	→	Stable

Landings decreased over the last decade but have increased again in 2012. Survey abundance indices are highly variable without trend over the last decades. Recent analysis has shown that that

biomass declined by about 80% since the 1920s and the maximum body size has decreased by about 30%. The stock size indicators (number/hour) show opposing trends comparing the last three years (2010–2012) with the average of the five previous years (2005–2009), either 10% lower (based on the Q1 survey) or 48% higher (Q4 suvery), suggesting no predominant trend in the data.

RECENT MANAGEMENT ADVICE:

New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 102 tonnes in 2015. All catches are assumed to be landed.*

Other considerations

ICES approach to data limited stocks

For data limited stocks for which an abundance or biomass index is available, ICES uses as harvest control rule an index-adjusted status-quo catch. The advice is based on a comparison of the three most recent index values with the five preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (number/hour) in the last three years (2010–2012) is 10% lower (based on the Q1 survey) and 48% higher (Q4 survey) than the average of the five previous years (2005–2009). This suggests no significant trend in the data and no changes in relation to the last three years average catches, corresponding to catches of no more than 128 t.

Additionally, considering that exploitation is unknown, ICES advises that catches should decrease by 20% as a precautionary buffer. This results in catches of no more than 102 t in 2014.

All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that turbot is mainly a bycatch species in fisheries for plaice and sole. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.23 Turbot (*Psetta maxima*) in the North Sea

FISHERIES: Turbot is a valuable bycatch in the fishery for flatfish and demersal species and takes place with beam trawls, otter trawl and static gear. There is a targeted gill net fishery that takes less than 10% of the total catch. Discarding in the trawl fisheries for turbot is negligible . No official minimum landing size has been set, but part of the fisheries adopted a voluntary minimum landing size of 30 cm. A reduction in fishing effort on target flatfish species such as plaice and sole may have influenced the level of bycatch.

Landings have fluctuated between 4000 t and 6 000 t until 1995. Since then they have stabilized at a level of 3 000t – 4000 t before dropping slightly below that level in 2010/11 and 12. Estimated landings in 2013 are 3008 t.

REFERENCE POINTS:

	Type	***Relative Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Undefined.	
	F_{MSY}	0.39	Precautionary proxy based on $F_{0.1}$, relative to the average of the time series in the 2014 assessment.

Precautionary approach	Not defined.		

(Last changed in: 2014)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Unknown
Qualitative evaluation	↘	↘	↘	Declining

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	?	?	Unknown
Qualitative evaluation	↗	↗	↗	Increasing from low level

Recruitment is variable around the long-term average. The sudden increase in F in 2002 is because of a reduction of the minimum landing size in The Netherlands in 2001. Since then fishing mortality has declined. Spawning-stock biomass is at a low level, but has been gradually increasing in recent years.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the data-limited approach that catches should be no more than 2406 t. All catches are assumed to be landed.

TACs may not be appropriate as a management tool for bycatch species. A combined TAC for turbot and brill may lead to overexploitation of one of the stocks. An increase in mesh size would lead to higher yield per recruit and reduction in the proportion of immature fish in the catches.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks with analytical assessment and forecast that are only treated qualitatively, ICES uses a short-term forecast applying the F_{MSY} proxy (or lower, if the stock biomass is estimated to be below MSY $B_{trigger}$). A change limit of ±20% is applied to the advice.

Since MSY $B_{trigger}$ has not been identified for this stock, the ICES MSY approach has been applied without consideration of SSB in relation to MSY $B_{trigger}$, and the method has been applied based directly on the F_{MSY} proxy. This implies fishing mortality should be reduced to 0.39, resulting in catches of no more than 1817t in 2015, which is a decrease of more than 20% in relation to the 2013 catches. A change limit of ±20% (uncertainty cap) is applied in the data-limited stock advice, and therefore ICES advises catches of no more than 2406 t in 2015. This is expected to lead to an increase in SSB of 23% from 2015 to 2016. All catches are assumed to be landed.

Mixed fisheries

Mixed fisheries advice informs managers of the consequences of setting TACs for single species which are exploited in a mixed fishery (ICES, 2014c). In contrast to single-species advice there is no single recommendation because no management objectives have been defined for mixed fisheries. Mixed fisheries forecasts explore a range of scenarios which provide insight on the overall balance between the various single species TACs. Major differences between the outcomes of the various scenarios indicate a potential for undershoot or overshoot of the advised landings corresponding to the single-species advice. The results provide indication of which species are globally limiting for the North Sea fisheries as a whole, but may not necessarily reflect the actual constraints on individual fishers.

Following the 'minimum' or the 'cod' scenario, the turbot catch option could not be fully utilized. Under the 'max', 'status quo effort' and 'effort management' scenarios the implied F would exceed these catches which is not considered precautionary.

Rationale	**Catches (2015)**	**Basis**	**Relative F (2015)**	**%SSB change** 1)	**% Catch change** 2)
DLS approach	2406	Maximum change (2013 catch * 0.8)	0.54	+23%	-20%
Mixed fisheries options – minor differences with calculation above can occur due to different methodology used (ICES, 2014c)					
Maximum	5469	A	1.59	-32%	+77%
Minimum	1803	B	0.39	+34%	-42%
Cod_ MP	1972	C	0.43	+31%	-36%
SQ effort	3351	D	0.80	+6%	+9%
Effort_Mgt	3026	E	0.70	+12%	-2%

Weights in thousand tonnes.
1) SSB 2016 relative to SSB 2015.
2) Human Consumption landings 2015 relative to TAC 2014.

Mixed fisheries assumptions

A Maximum scenario: Fleets stop fishing when last quota exhausted
B Minimum scenario: Fleets stop fishing when first quota exhausted
C Cod management plan scenario: Fleets stop fishing when cod quota exhausted
D SQ effort scenario: Effort in 2014 and 2015 as in 2013
E Effort management scenario: Effort reductions according to cod and flatfish management plans

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF considers that since advice for both turbot and brill in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that advice for turbot in the North Sea (Subarea IV) is that catches in 2015 should be no more than 2406 t. Using the relative proportion of the total landings of brill from IIIa, IV and VIId in 2013 (4% , 67% and 29% respectively) to derive a value for the North Sea alone, implies that catches of brill from the North Sea (Subarea IV) in 2015 should not exceed 1820 t. This implies that the combined catches of turbot and brill from Subarea IV (North Sea) in 2015 should not exceed 4,226 t. STECF notes that this value represents a 9% decrease on the agreed TAC for turbot and brill for 2014.

STECF notes that turbot is mainly a bycatch species in fisheries for plaice and sole. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.24 Witch (*Glyptocephalus cynoglossus*) in the North Sea

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Witch is an important bycatch in some *Nephrops* fisheries. There is an occasional directed fishery in the Skagerrak. In the North Sea it is mainly taken as by-catch. A few Danish seine fisheries have been targeting this species in IIa. There is no Minimum Landing Size (MLS) specified in EU waters. However, on a local level a minimum landing size of 28 cm is enforced in Germany, Denmark, Scotland, Sweden and in some coastal areas of England. Discard rates are unknown but are potentially important to the assessment. In 2013 preliminary recorded landings were around 1993 t.

A precautionary TAC (including lemon sole) in areas IIa and IV for 2013 was set to 6 391 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Assessment data are available for this species, especially from the IIIa fisheries (Denmark and Sweden). No analytical assessment can be presented, mainly due to a lack of sufficiently long datasets. Therefore, fishing possibilities cannot be projected.

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

F (Fishing Mortality)		
	2012	
Qualitative evaluation		Above possible reference points

TSB (Total Stock Biomass)		
	2006 - 2013	
Qualitative evaluation		Increase

Landings have declined in the last decade, but the 2012 landings in IIIa show an increase. Abundance indices show a declining trend since the peak observed in 2000 and an increase in recent years. The stock size indicator (number/hour) in the last three years (2011–2013) is more than 20% higher than the average of the five previous years (2006–2010) for both surveys. Exploratory estimates suggest that fishing mortality is above potential F_{MSY} proxies.

RECENT MANAGEMENT ADVICE:

New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 1574 tonnes. Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.*

Management of lemon sole and witch under a combined species TAC prevents effective control of the single species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

ICES approach to data limited stocks

For data limited stocks with abundance and fishing mortality information, ICES uses as harvest control rule an index-adjusted status-quo catch. Knowledge about the exploitation status also influences the advised catch.

The stock size indicator (number/hour) in the last three years (2011–2013) compared to the average of the five previous years (2006–2010) is 73% and 24% higher for the Quarter 1 and Quarter 3 survey respectively. This implies an increase of landings of at most 20 % in relation to the last three years average landings to 1968 t.

The effort of the main fleet with witch bycatches (otter trawls) in the North Sea and Skagerrak has declined by 14% (TR1) and 45% (TR2) between 2004 and 2012. In the Skagerrak, a similar decrease was seen for TR2 which is the main fleet in this area. At the same time, there is indication from a preliminary assessment that the stock may be overexploited. Concluding, there is uncertainty on the exploitation rate on witch, therefore ICES advises that landings should decrease by 20% as a precautionary buffer. This results in landings of no more than the last three years average landings of 1574 t in 2014.

Discards are known to take place, but the data are insufficient to estimate a discard proportion that could be applied to give catch advice; therefore total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that advice for witch for IIIa, IV and VIId is that landings in 2015 should be no more than 1574 t. Using the relative proportion of the total landings of witch from IIIa, IV and VIId in 2013 (53% , 50% and 0.1% respectively) to derive a value for the North Sea alone, implies that landings of witch from the North Sea (Subarea IV) in 2015 should not exceed 784 t. The advice for lemon sole for IIIa, IV and VIId is that landings in 2015 should be no more than 4350 t. Using the relative proportion of the total landings of lemon sole from IIIa, IV and VIId in 2013 (8% , 79% and 13% respectively) to derive a value for the North Sea alone, implies that landings of lemon sole from the North Sea (Subarea IV) in 2015 should not exceed 3447 t. This implies that the combined landings of witch and lemon sole from Subarea IV (North Sea) in 2015 should not exceed 4,231 t. STECF notes that this value represents a 34% decrease on the agreed TAC for lemon sole and witch for 2014.

STECF considers that since advice for both witch and lemon sole in the North Sea is now available from ICES it may be appropriate to adopt separate management measures to regulate exploitation of these stocks.

STECF notes that a substantial proportion of the total catch of witch is taken as a bycatch in mixed fisheries. TACs may not be appropriate as a management tool to control fishing mortality for bycatch species.

2.25 Norway pout (*Trisopterus esmarki*) in IIa, IIIa and the North Sea

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The fishery is mainly by Danish and Norwegian vessels using small mesh trawls in the northern North Sea.

The stock is managed by TACs. Landings fluctuated between 110,000 and 735,000 t. in the period 1971-1997, and apart from 2000 (184,000 t) decreased substantially in the following years The fishery was closed in 2005, reopened in 2006 and closed again in 2007. Landings in 2008 and 2009 were

36,100 t and 54,500 t respectively. Due to the very high 2009 recruitment catches in 2010 amounted to 125,955 t. The fishery was closed in the first half of 2011 and 2012. Catches in 2011 and 2012 were 6500 t and 27000 t. Total catch in the first half of 2013 has been 11 000 t. Historically, the fisheries have resulted in by-catches of other species, particularly whiting, haddock, saithe, and herring. By-catches of these species have been low in the recent decade. Norway pout itself has been a by-catch in the fisheries for shrimp on the North Sea.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The analytical seasonal XSA assessment model fitted for this stock is based on time-series of catch-at-age, four quarterly commercial cpue series, and four research survey series.

Norway pout is a short-lived species and most likely a one-time spawner. The population dynamics of Norway pout are very dependent on changes caused by recruitment variation and variation in predation (or other natural) mortality, and less by the fishery. Recruitment is highly variable and influences SSB and TSB rapidly because of the short life span of the species. The stock is assessed twice a year. The spring assessment provides stock status up to 1st of April of the current year. The autumn assessment provides stock status for the current year and a forecast of fishing possibilities in the following year.

MANAGEMENT OBJECTIVES: No specific management objectives are known to ICES for this stock. Due to the short-lived nature of this species a preliminary TAC is set every year, which is updated on the basis of advice in the first half of the year (using the escapement management strategy approach)..

REFERENCE POINTS:

	Type	Value	Technical basis
MSY Approach	MSY $B_{escapement}$	150 000 t	= B_{pa}
	F_{msy}	Undefined	None advised
Precautionary approach	B_{lim}	90 000 t	B_{lim} = B_{loss}, the lowest observed biomass in the 1980s
	B_{pa}	150 000 t	= B_{lim} $e^{0.3*1.65}$
	F_{lim}	Undefined	None advised
	F_{pa}	Undefined	None advised

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	?	?	?	Undefined
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined
Qualitative evaluation	↗	↘	↗	Below average

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger

Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The stock dynamic is highly variable from year to year, due to recruitment variability and a short life span. Recruitment has been very high in 2012 and about average in 2013. This is expected to maintain SSB above MSY Btrigger in 2014. Fishing mortality has been lower than the natural mortality for this stock and has decreased in recent years to below the long-term average F (0.6).

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach (see below) according to the escapement strategy that catches in 2014 should not exceed 216 000 t, All catches are assumed to be landed.

Other considerations

Management plans

Based on a new joint EU–Norway and a later EU request, new management strategies were evaluated in September 2012 and June 2013 and considered to be consistent with the precautionary approach under certain constraints.

MSY approach

Assuming a catch of 150000 t in 2013 and to maintain the spawning-stock biomass above MSY B(escapement) by 1 January 2015, catches in 2014 should not exceed 216 000 t. All catches are assumed to be landed.

The advice for 2014 is sensitive to the actual catches taken in quarters 3 and 4 of 2013. The forecast assumes that the total catch in 2013 is 150 000 t (well below the TAC for EU and Norway, which is 344 500 t). The 2013 catch assumption is based on the low quota uptake by Denmark and Norway (11 000 t taken during the first half of 2013, while preliminary information indicates that the uptake by the third week of September is of the order of 35 000 t) and the fact that the TAC has not been reached in recent years. In the last decade, catches in the 4th quarter have not exceeded 35 000 t. Therefore, 150 000 t is considered as a realistic upper-end estimate of the actual catch that may take place in 2013. If, however, catches in 2013 were substantially above 150 000 t, a catch lower than 216 000 t would be required in 2014 to maintain the stock above MSY B(escapement) by January 1 2015.

Precautionary approach

The precautionary approach corresponds to maintaining SSB above Bpa = MSY Bescapement on 1 January 2015. Therefore, it is similar to the MSY approach for this species.

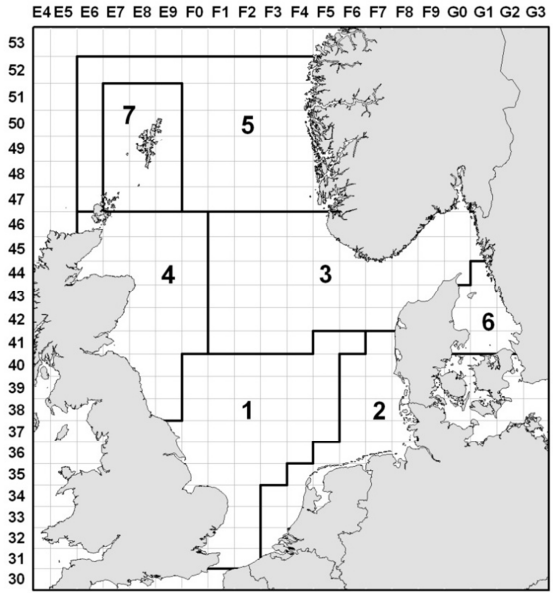
STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that to comply with the MSY $B_{escapenment}$ strategy, catches in 2014 should not exceed 216,000 t.

2.26 Sandeel (*Ammodytidae*) in the North Sea (IV), Skagerrak and Kattegat (IIIa)

Prior to 2010, ICES presented advice for this region in three units: North Sea (excluding the Shetland area), the Shetland area, and the Skagerrak–Kattegat. From 2010 onward, ICES advice has been provided for seven areas to better reflect the stock structure and to enable management to take action to avoid local depletions, as has been repeatedly advised in recent years. The amount of scientific and fisheries information differs by area and so does the level of detail for each area's advice.

Section	Sandeel Area (SA)	Rectangles

2.26.1	1	Dogger Bank area	31-34 E9-F2; 35 E9- F3; 36 E9-F4; 37 E9-F5; 38-40 F0-F5; 41 F5-F6
2.26.2	2	South Eastern North Sea	31-34 F3-F4; 35 F4-F6; 36 F5-F8; 37-40 F6-F8; 41 F7-F8
2.26.3	3	Central Eastern North Sea	41 F1-F4; 42-43 F1-F9; 44 F1-G0; 45-46 F1-G1; 47 G0
2.26.4	4	Central Western North Sea	38-40 E7-E9; 41-46 E6-F0
2.26.5	5	Viking and Bergen Bank area	47-51 E6 + F0-F5; 52 E6-F5
2.26.6	6	Division IIIa East (Kattegat)	41-43 G0-G3; 44 G1
2.26.7	7	Shetland area	47-51 E7-E9



FISHERIES: Sandeel is taken by trawls with codend mesh sizes of less than 16 mm. The fishery is seasonal, taking place from April to July. Most of the catch consists of *Ammodytes marinus*, but other sandeel species are caught as well. By-catch of other species is low. Sandeels are largely stationary after settlement and the sandeel must be considered as a complex of local populations.

The stocks are exploited predominantly by Denmark and Norway, with minor landings taken by the UK, Sweden, Germany and the Faroes. Landings fluctuated between 550,000 t and 1,200,000 t in the period 1980 to 2002 with the highest catches observed in 1997. Catches dropped in 2003 and have since then been well below average reaching a minimum of 101,599 t in 2012. Catches in 2013 increased to 243,345 t. The number of Danish vessels has declined from 200 vessels in 2004 to 84 in 2009, leading to a 43% reduction in total kilowatt days. In 2007, the Danish industrial vessels were given individual tradable quotas (ITQ) on sandeel which prompted a change towards fewer and larger vessels. The Norwegian fleet fishing for sandeel declined from 90 to 33 vessels between 2002 and 2009.

Dredge survey information for December has been available since 2010 and is used to estimate annual recruitment and conduct forecasts for SAs (Sandeel Area) 1, 2, and 3. A dredge survey is

also available for SA 4, but at present there is not enough overlap with fishery data to provide a forecast. ICES advice for SAs 4–7 is based on the approach to data-limited stocks.

Catch possibilities are largely dependent on the size of the recruiting year-class.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

MANAGEMENT OBJECTIVES: No management objectives have been set for these stocks nor are the Sandeel Areas managed jointly by the coastal states. Norway has implemented an experimental area-based sandeel management plan in the Norwegian waters since 2010, and regulations in Norwegian waters have not been based on ICES advice.

RECENT MANAGEMENT ADVICE:

ICES provides advice separately for the 7 areas. The table below gives an overview of the ICES advice by sandeel area.

Year	Sandeel Area 1	Sandeel Area 2	Sandeel Area 3	Sandeel Area 4	Sandeel Area 5	Sandeel Area 6	Sandeel Area 7	EU zone TAC	NOR zone TAC	ICES landings
2005 [1]	Exploitation to be kept below level of 2003. Adjustment to be made conditional on the abundance of the 2004 year class.					No advice		661	10 [2]	177
2006 [1]	The fishery should remain closed until information is available which assures that the stock can be rebuilt to B_{pa} by 2007.					No advice		300	0	293
2007 [1]	The fishery should remain closed until information is available which assures that the stock can be rebuilt to B_{pa} by 2008.					No advice		173	51	230
2008 [1]	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to B_{pa} by 2009.					No advice		375	128	348
2009 [1]	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to B_{pa} by 2010.					No advice		377	0	353
2010 [1]	The fishery should only be allowed if monitoring information is available and shows that the stock can be rebuilt to B_{pa} by 2011.					No advice		377	50	414
2011	< 320	< 34	0	5–10	No increase in effort unless there is evidence that this is sustainable.			354	90	438
2012	< 23	< 5	< 5	< 5	No increase in catches unless there is evidence that this is sustainable.			61	42	102
2013	< 224.544	< 17.544	< 78.331	< 2.041	0	< 0.219	0	286	20	243 [3]
2014	< 57	< 5	< 270	< 5	0	< 0.219	0			

Weights in thousand tonnes.

[1] Advice for Subarea IV, excluding the Shetland area.

[2] TAC set for EU fisheries 10 kt, seasonal effort limitations set for Norwegian fisheries.

[3] Preliminary.

For SAs 1–3 the advice is based on ICES MSY approach to short-lived species as it was last year. For SAs 4–7 the advice this year is based on ICES approach to data-limited stocks, whereas last year the advice was based on precautionary considerations.

For short-lived species such as sandeel, ICES interpretation of the MSY concept uses Bpa estimates as the default value for MSY Bescapement. ICES advice is based on the sandeel stock being at or above MSY Bescapement in the year after the fishery has taken place. This escapement strategy should retain a stock that is sufficient for successful recruitment and which can also provide an adequate resource for predators of sandeel (ICES, 2010).

In the light of studies linking low sandeel availability to poor breeding success of kittiwake, all commercial fishing in the Firth of Forth (SA 4) has been prohibited since 2000, except for a limited opening to fishing in May and June of each year to monitor the stock.

STECF COMMENTS:

STECF agrees with ICES advice.

STECF notes that the quality of the current assessment is considered much improved, because: a) the stock assessment areas, used since 2010, better reflect the actual spatial stock structure and dynamics of sandeel, and b) the use of fishery-independent data from dredge surveys.

Application of the "SMS-effort" assessment model (in combination with the Sandeel Area-based assessment approach) has removed retrospective bias in F and SSB for the most recent years.

For SAs 1 and 2 the 2013 surveys confirmed the 2012 recruitment values estimated in last year's assessment. In SA 3 the 2012 recruitment value estimated in last year's assessment was revised downwards in this year's assessment.

2.26.1 Sandeel (*Ammodytidae*) in Area-1 (The Dogger bank area).

FISHERIES: The landings in 2013 were 176,203 t, . Average landings in the period 1983 to 2013 are 316,384 t.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{escapement}$	215 000 t	= B_{pa}
	F_{MSY}	Not defined.	
Precautionary Approach	B_{lim}	160 000 t	Median SSB in the years (2000–2006) of lowest SSB and no impaired recruitment (ICES, 2010).
	B_{pa}	215 000 t	$B_{pa} = B_{lim} * exp^{(\sigma * 1.645)}$, with $\sigma = 0.18$ estimated from assessment uncertainty in the terminal year (ICES, 2010).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

MANAGEMENT AGREEMENTS: No specific management objectives are known to STECF.

STOCK STATUS:

	Fishing pressure		
	2011	2012	**2013**
MSY (F_{MSY})	?	?	? Undefined
Precautionary approach (F_{pa}, F_{lim})	?	?	? Undefined

	Stock size		
	2012	2013	**2014**
MSY ($B_{escapement}$)	✓	✗	✗ Below escapement trigger

Precautionary approach (B_{pa}, B_{lim})	✓	✗	o	Increased risk

The stock at the start of 2014 is expected to be just below Blim, Low mean weights in 2013 seem to be the main reason for the stock size being lower than expected. Recruitment in 2013 was below average

RECENT MANAGEMENT ADVICE: `

ICES advises on the basis of the MSY approach that the catch in 2014 should be no more than 57,000 t to maintain SSB in 2015 above MSY $B_{escapement}$. All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES advice.

2.26.2 Sandeel (*Ammodytidae*) in Area-2 (South Eastern North Sea)

FISHERIES: The landings in 2013 were 22,348 t,. Average landings in the period 1983 to 2013 are 58,501 t.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{escapement}$	100 000 t	= B_{pa}
	F_{MSY}	Not defined.	
Precautionary Approach	B_{lim}	70 000 t	Median SSB in the years (2000–2006) of lowest SSB and no impaired recruitment (ICES, 2010).
	B_{pa}	100 000 t	$B_{pa} = B_{lim} * exp^{(\sigma * 1.645)}$, with $\sigma = 0.23$ estimated from assessment uncertainty in the terminal year (ICES, 2010).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

MANAGEMENT AGREEMENTS: No specific management objectives are known to STECF.

STOCK STATUS:

	Fishing pressure		
	2011	2012	**2013**
MSY (F_{MSY})	?	?	? Undefined
Precautionary approach (F_{pa}, F_{lim})	?	?	? Undefined

	Stock size		
	2012	2013	**2014**
MSY ($B_{escapement}$)	✗	✗	✗ Below escapement trigger
Precautionary approach (B_{pa}, B_{lim})	o	o	o Increased risk

Despite a relatively low F in 2013, SSB in 2014 has increased but remains below Bpa. . Recruitment in 2013 is estimated to be low and this is expected to keep SSB below Bpa in 2015.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach to a short – lived species that the catch in 2014 should be zero and even then the SSB is expected to be below MSY Bescapment in 2015 . In order to present an assessment, data on biological characteristics of the catch composition and catch and effort data are required. A zero TAC will not provide any information on the status of 1-year old and older sandeel, important for the continuity of the assessment in coming years. The advice of a maximum of 5000 t of catch in 2014, with an

associated sampling protocol in the fishery, should provide sufficient samples and, thus, reliable estimates.

STECF COMMENTS: STECF agrees with the ICES advice.

2.26.3 Sandeel (*Ammodytidae*) in Area-3 (Central Eastern North Sea)

FISHERIES: The landings in 2013 were 39,115 t. Average landings in the period 1983 to 2013 are 214,664 t.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{escapement}$	195 000 t	= B_{pa}
	F_{MSY}	Not defined.	
Precautionary Approach	B_{lim}	100 000 t	The highest SSB (in 2001) in the period (2001–2007) with the lowest SSB and low recruitment (ICES, 2010).
	B_{pa}	195 000 t	$B_{pa} = B_{lim} * exp^{(\sigma * 1.645)}$, with $\sigma = 0.40$ estimated from assessment uncertainty in the terminal year (ICES, 2010).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

MANAGEMENT AGREEMENTS: No specific management objectives are known to ICES.

An experimental sandeel management plan has been applied in Norwegian waters since 2010. This management plan has not been evaluated by ICES.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	?	?	?	Undefined
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{escapement}$)	✗	✗	✗	Below escapement trigger
Precautionary approach (B_{pa},B_{lim})	o	✗	✗	Below B_{lim}

The SSB in 2014 is below Blim and recruitment in 2013 was estimated to be high. This high recruitment should lead to an increase in SSB in 2015 and is the main reason for the high catch advice in 2014.

Low SSB in 2013 and 2014 is caused by historically low fish weights in 2013. Further factors contributing to the low SSB in 2014 are the historically low proportion of mature fish at age 2 observed in the dredge survey at the end of 2013 and the downward revision of the 2012 recruitment in this year's assessment.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that the catch in 2014 should be no more than 270 000 t to maintain SSB in 2015 above MSY Bescapement. All catches are assumed to be landed. The advised catch is mainly driven by a large recruitment in 2013 as estimated by the dredge survey.

Other considerations

MSY approach

Following the ICES MSY approach to a short-lived species, the fishery in 2014 should allow for sufficient stock (MSY Bescapement) to remain for successful recruitment in 2015. This implies a catch of no more than 270 000 t in 2014.

The MSY approach results in F = 0.64 in 2014. This value is close to the long-term average F for this stock and does not suggest a very high risk of overfishing.

Management plan

Based on the Norwegian national management plan, a TAC for the Norwegian EEZ of SA 3 was set at 20 000 t in 2013 (the 2014 TAC for the Norwegian EEZ of SA 3 was not available at the time of the drafting of this advice). This experimental management plan has been applied in the Norwegian zone since 2010 and is based on geographical areas that are opened and closed on alternate years, with an area opened only if the spawning stock is estimated by the national institute to be large and widely distributed within it. The main objective of the plan is to rebuild the spawning stock and to increase the total recruitment and catch potential.

STECF COMMENTS: STECF agrees with the ICES advice.

2.26.4 Sandeel (*Ammodytidae*) in Area-4 (Central Western North Sea)

FISHERIES: The landings in 2013 were 5,032 t. Average landings in the period 1983 to 2013 are 33,611 t. Because low sandeel availability affects the breeding success of kittiwake, all commercial fishing in the Firth of Forth has been prohibited since 2000, except for a limited fishery conducted in May and June to monitor the stock.

REFERENCE POINTS: No reference points are defined for this stock.

MANAGEMENT AGREEMENTS: No specific management objectives are known to STECF.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	?	?	?	Unknown
Precautionary approach (F_{pa}, F_{lim})	?	?	?	Unknown
Qualitative evaluation	→	→	→	Very low

Stock size				
	2012	2013	**2014**	
MSY ($B_{escapement}$)	?	?	?	Unknown
Precautionary approach (B_{pa}, B_{lim})	?	?	?	Unknown
Qualitative evaluation	→	↘	→	Stable

Survey data indicate that the strong 2009 year class has been followed by lower recruitments in 2010, 2011, 2012, and 2013. Despite indications of a low recruitment for four consecutive years, the 5000 t taken in the southern part of SA 4 in 2013 were caught at a very high cpue.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the approach to data-limited stocks that catches should not exceed 2,041 t. in 2014. This TAC level will not provide enough samples from the fishery to develop a full assessment for this stock. A monitoring TAC should therefore be considered, with an associated sampling protocol in the fishery. Total catches should not exceed 5000 t. All catches are assumed to be landed.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted status quo catch. Knowledge about the exploitation status also influences the advised catch.

Because the precautionary buffer (20% reduction in catch) was applied in the 2013 advice and the new data available do not change the perception of the stock, the same catch advice (2041 t) would still be applicable for 2014. However, in order to present an analytical assessment in the future, data on biological characteristics of the catch composition and catch and effort data are required. A total maximum advised catch of 5000 t, with an associated sampling protocol in the fishery, should provide sufficient samples and, thus, reliable estimates. The lack of a short-term forecast for this area precludes a direct evaluation of the impact of this catch on F or SSB, but 5000 t constitutes only a small fraction of the historical catches taken in SA 4 before the closure of commercial fishing in the Firth of Forth and is not considered to compromise the long-term sustainability of sandeel in SA 4. Aided by this information, it is expected that an analytical assessment for SA 4 can be developed in the next 3–5 years.

As this is a short-lived species, the advice will be considered again next year.

Additional considerations

It is important to continue the Scottish dredge survey in this area, even though the overlap between this survey and the commercial CPUE time series is currently too short to provide reliable estimates of incoming 1-group strength. Little or no information is available for this area from the in-year monitoring system in recent years because of low fishing effort. Until there is sufficient overlap in the time series of dredge survey and commercial data there will be no scientific basis for analytical assessment similar to those SAs1-3..

STECF COMMENTS: STECF agrees with the ICES advice.

2.26.5 Sandeel (*Ammodytidae*) in Area-5 (Viking and Bergen Bank area)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014.

FISHERIES: No landings have occurred since 2004 (except for 4 t landed in 2007). Norway closed fisheries on the Viking Bank area in 2011 because of very low estimates of sandeel abundance based on acoustic surveys in 2007–2010 (ICES, 2010).

REFERENCE POINTS: No reference points are defined for this stock.

MANAGEMENT AGREEMENTS: No specific management objectives are known to STECF.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
Qualitative evaluation	Very low
SSB (Spawning-Stock Biomass)	
	2011–2013
Qualitative evaluation	Insufficient information

Catch statistics and acoustic data are available for this stock The available information is inadequate to evaluate stock status or trends. The state of the stock is therefore unknown.

RECENT MANAGEMENT ADVICE: The new data (catches) available do not change the perception of sandeel in SA 5; therefore, the advice for this stock in 2014 is the same as the advice for 2013: *ICES advises on the basis of the approach to data-limited stocks that catches should not increase unless there is evidence that this will be sustainable. This corresponds to zero catch.*

STECF COMMENTS: STECF agrees with ICES advice.

2.26.6 Sandeel (*Ammodytidae*) in Area-6 (Division IIIa East (Kattegat)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014.

FISHERIES: The landings in 2013 were 102 t.

REFERENCE POINTS: No reference points are defined for this stock.

MANAGEMENT AGREEMENTS: No specific management objectives are known to STECF.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
Qualitative evaluation	Insufficient information
SSB (Spawning-Stock Biomass)	
	2011–2013
Qualitative evaluation	Insufficient information

Only catch statistics are available for this stock. The available information is inadequate to evaluate stock status or trends. The state of the stock is therefore unknown.

RECENT MANAGEMENT ADVICE: The new data (catches) available do not change the perception of sandeel in SA 6; therefore, the advice for this stock in 2014 is the same as the advice for 2013: *ICES advises on the basis of the approach to data-limited stocks that catches should be no more than 219 tonnes. All catches are assumed to be landed.*

STECF COMMENTS: STECF agrees with the ICES advice.

2.26.7 Sandeel (*Ammodytidae*) in Area-7 (Shetland area)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014.

FISHERIES: Reported landings for 2013 are 0t.

REFERENCE POINTS: No reference points are defined for this stock.

MANAGEMENT AGREEMENTS: No specific management objectives are known to ICES.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
Qualitative evaluation	Very low
SSB (Spawning-Stock Biomass)	
	2010–2013
Qualitative evaluation	Insufficient information

Only catch statistics are available for this stock. The available information is inadequate to evaluate stock status or trends. The state of the stock is therefore unknown.

RECENT MANAGEMENT ADVICE:

The new data (catches) available do not change the perception of sandeel in SA 7; therefore, the advice for this stock in 2014 is the same as the advice for 2013: *ICES advises on the basis of the approach to data-limited stocks that no increase in the fisheries should take place unless there is evidence that this will be sustainable. This corresponds to zero catch.*

STECF COMMENTS: STECF agrees with the ICES advice.

2.27 Rays and skates in the North Sea

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Rays and skates are taken as target and by-catches in most demersal fisheries in the ICES area, including the North Sea and with the exception of the Baltic. Most ray and skate landings are by-catches in trawl and seine fisheries. There are, however, a number of small-scale fisheries using large meshed tangle nets directed at thornback ray, and there have been directed longline fisheries for common skate

Ray fisheries occur in coastal waters and tend to be seasonal, and size selection in towed gears is minimal owing to the shape of rays, though selection on board has occurred to comply with the market's preference for larger fish.

Prior to the introduction of a generic TAC for all skate and rays species in North Sea in 1999 there has been no obligation for fishermen to record catches in the logbooks. As a consequence, there is a lack of information on the fisheries for rays. Statistical information by species is also limited because few European countries differentiate between species in landings statistics and they are collectively recorded as skates and rays.

At present ray and skate fisheries are managed by means of a generic, multi-species TAC, along with prohibitions for severely depleted species.

Skates and rays fisheries are currently managed under a common TAC, although this complex comprises species that may have different vulnerabilities to exploitation. TAC advice is based on the status of the main commercial species, with species-specific advice also provided on an individual basis.

Overall landing figures for Rays and Skates in the North Sea have decreased in the last 15 years from more than 6,000 t in the mid 90ties to about 2,500 t in 2011.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES.

REFERENCE POINTS: There are no agreed reference points for rays and skates in the North Sea.

STOCK STATUS:

No reliable assessments can be presented for these stocks. The main cause of this is the lack of species specific landings data. In the absence of formal stock assessments and defined reference points for the species and stocks of skates (members of the family Rajidae) a qualitative evaluation of the status of individual species/stocks is provided, based on surveys and landings.

Three commercial skate species (thornback ray, spotted ray, and cuckoo ray) show increasing trends in relative abundance in fishery-independent trawl surveys. There is evidence of a long-term decline to depleted levels in the distribution and relative abundance of one commercial species (*Dipturus batis* complex). Trends in the relative abundance of two other commercial species (blonde ray, undulate ray) are unclear. Starry ray is an abundant non-commercial species and is almost exclusively discarded, and stock trends are decreasing. Discard survivorship is not known.

The advice is based on the stock status of the main commercial species in the ecoregion, with species-specific advice provided below. Landings of skates and rays in the North Sea have generally declined, and this is associated with changes in species composition and relative abundance.

RECENT MANAGEMENT ADVICE: The most recent advice for this stock was provided by ICES in 2012 and covers 2013 and 2014.

The previous advice was given for 2011 and 2012. The basis of this advice was the precautionary approach. This year, individual advice is given for each of the main species, on the basis of ICES approach to data-limited stocks.

ICES provides advice on the overall exploitation (landings and discards) of the ray and skates species assemblage, and also on individual species. ICES does not advise that individual TACs be established for each species, at present. This is because the catch statistics for individual species are not reliable. ICES considers the generic TAC, at best, as an ineffective measure, regulating overall outtake from the assemblage. ICES advises that a suite of species- and fishery-specific measures be developed to manage the fisheries on commercial species and achieve recovery of the depleted species. Such measures should be developed by managers involving all stakeholders; ICES is willing to assist in the process.

ICES does not advise a precautionary decrease in TAC, because it is considered that this would lead to increased regulatory discarding and further reduce the quality of the catch data. ICES does not view the TAC as the main means to manage the fishery, but rather as an upper boundary on the outtake. Therefore, further reductions to the TAC are not considered to be the best approach to allow recovery of depleted species at present.

Management measures should be framed in a mixed-fisheries context, considering the overall behaviour of demersal fleets, and the drivers for such behaviour. Because these species are mainly caught in mixed fisheries, when the TAC is exhausted, catches continue to take place, but are discarded. In order to achieve optimal harvesting of the commercial species, and to assist recovery of the depleted species, a suite of measures should be put in place.

Closure to fishing of spawning and/or nursery grounds, and measures to protect the spawning component of the population (e.g. maximum landing size) are powerful tools to protect rays and skates. In some cases, single-species TACs may be appropriate, especially for easily identified species, and/or discrete stocks in limited distribution areas.

Given that the European Community intends to introduce a ban on discards, minimum or maximum landing sizes should be carefully considered before they are introduced, because they could lead to increased discards. Size limits may best be applied if discard (escapee) survival can be shown to be high.

Resume of ICES advice for 2013 and 2014 is provided in the table below.

Species	Area	State of stock	Advice
Common skate *Dipturus batis* complex	IVa (likely merging with VI & IIa) IV, VIId, IIIa	Depleted	Zero catch. Retain on prohibited species list
Thornback ray *Raja clavata*	IV, VIId, IIIa	increasing	+ 20%
Spotted ray *Raja montagui*	IV, VIId, IIIa	Stable/increasing	+ 20%
Starry ray *Amblyraja radiate*	IV, VIId, IIIa	Decreasing	- 36%
Cuckoo ray *Leucoraja naevus*	IV, VIId, IIIa	Increase	+ 20%
Blonde ray *Raja brachyuran*	VIIde	Uncertain	- 20%
Undulate ray *Raja undulate*	VIId, VIIe	Low and highly variable	No target fishery
Other species	IV, VIId, IIIa	Uncertain	- 20%

MSY approach

An estimate of fishing mortality is not available. Demersal elasmobranchs are long-lived stocks, and no population estimates are available. Further information is required on each of these stocks before MSY reference points can be identified. Rays and skates offer a unique opportunity to institute spatial, seasonal, and technical measures that can be used to improve stock status and regulate fishing mortality. This is because they have defined spatially discrete life history stages, and because stock–recruitment relationships are believed to be very strong.

PA approach

The previous advice was given for 2011 and 2012. The basis of this advice was ICES precautionary approach. This year, individual advice is given for each of the main stocks, on the basis of ICES approach to data-limited stocks. An overall TAC advice is also provided using ICES approach to data-limited stocks.

No targeted fishing should be permitted for *Raja undulata* and a zéro catch for the *Dipturus batis* complex.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stocks and the advice for 2013 and 2014.

2.28 Spurdog (*Squalus acanthias*) in the North Sea

Spurdog in the North Sea is assessed as part of the spurdog stock in the North East Atlantic and the stock summary and advice is given in Section 8.10.

2.29 *Scyliorhinus canicula* and *Scyliorhinus stellaris* in Subareas IIa, IV and VIId

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Lesser-spotted dogfish *Scyliorhinus canicula* are mainly bycaught in mixed demersal fisheries. They are generally of low commercial value and discard rates are high. Discard survivorship is considered to be high. Fisheries for lesser-spotted dogfish may take place for use as bait in pot fisheries, but this is unquantified.

In the North Sea waters landings of *Scyliorhinus* canicula are available for division IIa IV and VIId, landings have increased since 2000 from 1758t to 2546t in 2011.

Lesser-spotted dogfish is a small, productive, egg-laying shark. It is one of the most common small sharks in this ecoregion. It has a high discard survival rate.

Some demersal sharks, including lesser-spotted dogfish, may benefit from scavenging on trawl-damaged organisms and discards.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

In the absence of defined reference points, the status of the stocks of S*cyliorhinus canicula* cannot be evaluated. The following provides a qualitative summary of the general status of the stocks based on surveys and landings assessment:

Species	**Area**	**State of stock**
Scyliorhinus canicula (lesser spotted dogfish)	IIa, IV VIId	Increasing

The stock is estimated to be increasing. Survey catch rates are increasing throughout the ecoregion. The average of beam trawl survey (BTS-Q3), assumed as stock size indicator, in the last two years (2010-2011) is 35% higher than the average of the five previous years (2005-2009). The average of the international bottom trawl surveys in the North Sea (IBTS-Q1), assumed as a stock size indicator, in the last two years (2010-2011) is 26% higher than the average of the five previous years (2005-2009).Catches are stable or increasing, though data are not complete. Given the increase in abundance, and stable/increasing catches, it can be inferred that exploitation (fishing mortality) is stable or decreasing.

RECENT MANAGEMENT ADVICE:

Scyliorhinus canicula (Lesser-spotted dogfish)

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	
Cautiously avoid impaired recruitment (**Precautionary Approach**)	
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

There is no TAC in place for *Scyliorhinus canicula.*

Advice for 2013-2014 by individual stocks

Species	**Area**	**Advice**
Scyliorhinus canicula (lesser spotted dogfish)	IIIa, IV and VIId	Maximum catches increase of 20% No invidual TAC

Based on ICES approach to data-limited stocks, ICES advises that catches could be increased by a maximum of 20%. Because the data for catches of lesser-spotted dogfish are not fully documented, ICES is not in a position to quantify the result. ICES does not advise that an individual TAC be set for this stock, at present.

Given that there is a consistent increase in stock size over an extended period of time, no additional precautionary buffer is needed.

Outlook for 2013 and 2014

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data.

MSY transition scheme

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2013 and 2014. The rate of exploitation of these stocks relative to F_{MSY} is not currently known.

Additional information

As there is no obligation to report lesser-spotted dogfish at the species level, they are often included in generic categories such as “dogfish and hounds”. Therefore, landings data are not considered reliable. High levels of discarding take place.

Fishery-independent trawl surveys provide the longest time-series of species-specific information.

The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. The harvest control rules are expected to stabilize stock size, but they may not be suitable if the stock size is low and/or overfished.

STECF COMMENTS: STECF agrees with the ICES advice.

2.30 Other Demersal elasmobranchs in the North Sea, Skagerrak and Eastern channel

Angel sharks and Smooth Hounds in the North Sea are assessed as part of their stocks in the North East Atlantic and the stock summary and advice for 2013 is given in Sections 8.19 and 8.20.

2.31 Herring (*Clupea harengus*) in the North Sea (Sub-area IV) including components of this stock in Divs. IIa, IIIa and VIId

Based on the distributions of the spawning grounds, larval drift, nursery areas and migration of the adults, three main stock units of herring have been defined in the North Sea:

- Buchan herring. Spawn July to September in the Orkney Shetland area and off the Scottish east coast. Nursery areas are along the east coast of Scotland and the Skagerrak and Kattegat.
- Banks herring. Spawn August to September, off English east coast. Historically spawning also took place on the western edge of the Dogger Bank. Nursery areas are off the English east coast and Danish west coast.
- Downs herring. Spawn December to February in the southern North Sea and Eastern Channel. Nursery areas are off the English east coast, Dutch coast, Danish west coast and in the German Bight.

In addition to the three main stock units, a number of small spring spawning units exist, spawning in the coastal area of the eastern North Sea.

The stock complexity of herring in the North Sea is further complicated by the existence in the north-eastern part of the North Sea of herring populations spawning in the winter and spring in the

western Baltic, Skagerrak and Kattegat. Herring from these populations migrate into the North Sea mainly to feed in summer and autumn.

Although the three main North Sea herring stocks include summer, autumn and winter spawners they are named autumn spawners to distinguish them from the spring spawning stocks.

FISHERIES: The North Sea autumn spawning herring is exploited by Belgium, Denmark, France, Faroe Islands, Germany, Netherlands, Norway, Sweden, and UK. Four main fisheries exploit the stock:

- Fleet A: Directed herring fisheries with purse-seiners and trawlers (32 mm minimum mesh size) in the North Sea and eastern Channel.
- Fleet B: Herring taken as by-catch in the small-mesh fisheries in the North Sea under EU regulations (mesh size less than 32 mm).
- Fleet C: Directed herring fisheries in the Skagerrak and Kattegat with purse-seiners and trawlers (32 mm minimum mesh size).
- Fleet D: By-catches of herring caught in the small-mesh fisheries (mesh size less than 32 mm) in Skagerrak and Kattegat.

At present, the fishery on the stock is managed by five separate TACs in three different management areas (Skagerrak and Kattegat, Northern and Central North Sea, and Southern North Sea and Eastern Channel) through joint arrangements by EU and Norway. For both the North Sea and the Skagerrak Kattegat area, two separate TAC's are set, one for each of the four fleets.

Most catch data reported by ICES were official landings, but for some nations catch estimates have been corrected by ICES for unallocated and misreported catch. Discard data are either incomplete or entirely missing. ICES catch includes unallocated and misreported landings, discards and slipping. Denmark and Norway provided information on by-catches of herring in the industrial fishery. The total catch estimate for the North Sea and eastern Channel in 2013 by ICES amounts to 498,501 t.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The age-based assessment is based on landings from Subarea IV and Division IIIa and VIId and on four survey time series (IBTS Q1 1 ringer, IBTS0, SCAI, HERAS).

REFERENCE POINTS:

	Type	**Value**	**Technical basis**
Management plan	F_{MP}	$F_{0\text{-}1} = 0.05$ $F_{2–6} = 0.25$	SSB is greater than the SSB_{MP} upper trigger of 1.5 million t (based on simulations).
		$F_{0\text{-}1} = 0.05$ $F_{2–6} = 0.25 – (0.15*(1500000-SSB)/700000)$	SSB is between the SSB_{MP} triggers of 0.8 and 1.5 million t (based on simulations).
		$F_{0\text{-}1} = 0.04$ $F_{2–6} = 0.10$	SSB is less than the SSB_{MP} lower trigger of 0.8 million t (based on simulations).
MSY Approach	MSY $B_{trigger}$	not defined	
	F_{MSY}	0.27 [0.24–0.3]	Stochastic simulations with Beverton & Holt and Ricker stock–recruitment curve
Precautionary approach	B_{lim}	800 000 t	< 0.8 million t; poor recruitment has been experienced. Defined in 1997/2008.

	B_{pa}	1.0 million t	Based on 5% risk of falling below B_{lim} and the terminal year spawning-stock biomass CV from the SAM assessment.
	F_{lim}	Not defined	
	F_{pa}	Not defined	

STOCK STATUS:

Fishing pressure	2011	2012	**2013**
MSY (F_{MSY})	✓	✓	✓ Appropriate
Precautionary approach (F_{pa})	?	?	? **Undefined**
Management plan (F_{MP})	✓	✓	✓ Below limit

Stock size (at spawning time in autumn)	2011	2012	**2013**
MSY ($B_{trigger}$)	?	?	? Undefined
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓ Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓ Above trigger

The assessment was benchmarked in 2012 and a new assessment methodology was accepted. Year-class strength has been consistently weak since 2002 with year classes 2002 to 2007 being among the weakest. Since 1996 the stock has fluctuated above B_{pa}; however, ICES considers that the stock is in a low productivity phase. Fishing mortality has been below F_{MSY} since 1996.

MANAGEMENT AGREEMENTS: A management plan was agreed by the EU and Norway in 2008 (Annex 6.3.9.a). ICES evaluated the 2008 plan (ICES, 2012) and concluded that it is consistent with both the precautionary and MSY approaches. A new management plan was agreed by EU–Norway in 2014. Until ICES evaluates this management plan as precautionary, the 2008 plan will be the advice basis.

The elements of the plan are as follows:

1. *Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 800,000 tonnes (Blim).*
2. *Where the SSB is estimated to be above 1.5 million tonnes the Parties agree to set quotas for the directed fishery and for by-catches in other fisheries, reflecting a fishing mortality rate of no more than 0.25 for 2 ringers and older and no more than 0.05 for 0 - 1 ringers.*
3. *Where the SSB is estimated to be below 1.5 million tonnes but above 800,000 tonnes, the Parties agree to set quotas for the direct fishery and for by-catches in other fisheries, reflecting a fishing mortality rate on 2 ringers and older equal to:*

   0.25-(0.15(1,500,000-SSB)/700,000) for 2 ringers and older,*
   and no more than 0.05 for 0 - 1 ringers

4. *Where the SSB is estimated to be below 800,000 tonnes the Parties agree to set quotas for the directed fishery and for by-catches in other fisheries, reflecting a fishing mortality rate of less than 0.1 for 2 ringers and older and of less than 0.04 for 0-1 ringers.*
5. *Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 15 % from the TAC of the preceding year the parties shall fix a TAC that is no more than 15 % greater or 15 % less than the TAC of the preceding year.*
6. *Notwithstanding paragraph 5 the Parties may, where considered appropriate, reduce the TAC by more than 15 % compared to the TAC of the preceding year.*

7. *By-catches of herring may only be landed in ports where adequate sampling schemes to effectively monitor the landings have been set up. All catches landed shall be deducted from the respective quotas set, and the fisheries shall be stopped immediately in the event that the quotas are exhausted.*
8. *The allocation of the TAC for the directed fishery for herring shall be 29 % to Norway and 71 % to the Community. The by-catch quota for herring shall be allocated to the Community.*
9. *A review of this arrangement shall take place no later than 31 December 2011.*
10. *This arrangement enters into force on 1 January 2009.*

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the agreed 2008 EU–Norway management plan that catches of North Sea autumn spawning herring in all areas in 2015 should be no more than 461 664 t in 2015, including 429 797 t for the A fleet. ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring, such as extraction of marine aggregates and marine construction on the spawning grounds, should not occur.

Management plan

Following the 2008 agreed management plan between EU and Norway (F = 0.25) implies a decrease in TAC of 9% resulting in a TAC of 429 797 t for the A-fleet in 2015 (Scenario 2), which would lead to an SSB of around 1.9 million t at spawning time in 2015.

The agreed 2008 management plan (Annex 6.3.9.a) between EU and Norway was evaluated (ICES, 2011a) and ICES concluded that the plan is consistent with the precautionary and MSY approaches. ICES evaluated new options of the management plan in 2012 (ICES, 2012). On this basis, the EU and Norway agreed on a new management plan in 2014. ICES has not yet evaluated the agreed 2014 management plan (see Annex 6.3.9.b).

MSY approach

As no MSY $B_{trigger}$ has been identified for this stock, the ICES MSY approach has been applied without considering SSB in relation to MSY $B_{trigger}$. Following the ICES MSY approach implies an increase in fishing mortality to 0.27, resulting in catches of less than 460 536 t in 2015 (Scenario 6). This is expected to lead to an SSB of around 1.9 million tonnes in 2015.

Precautionary approach

The SSB is expected to remain above B_{pa} in 2015. Under the revised reference points, F_{pa} is no longer considered an operational reference point for the fisheries management of the North Sea herring stock.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 for which, according to the existing 2008 EU Management plan, catches should be no more than 461 664 t, including 429 797 t allocated to the A-fleet.

2.32 Herring (*Clupea harengus*) in Divisions IVc and VIId (Downs spring-spawning herring)

FISHERIES: The Downs herring constitutes one of the three main stock units forming the North Sea herring stock and it is included in Section 2.31 on Herring (*Clupea harengus*) in the North Sea (Sub-area IV) including components of this stock in Div. IIa, IIIa and VIId

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Assessment has only been made on the combined North Sea stock based on analysis of catch at age data calibrated with survey data. No separate assessment has recently been made for the Downs component of the stock.

REFERENCE POINTS: No reference points have been defined for Downs herring. The reference points for North Sea autumn spawning herring are given above.

STOCK STATUS: The stock has returned to its pre-collapsed state and is now again a major component of the stock.

RECENT MANAGEMENT ADVICE: See Section 2.31 on herring in the North Sea and adjacent areas. The sub-TAC for Divisions IVc and VIId was established for the conservation of the spawning aggregation of Downs herring. The Downs herring is now again a major component of the stock. It is probable that exploitation of Downs herring has been relatively high. In the absence of data to the contrary ICES proposes that a share of 11% of the total North Sea TAC (average share 1989–2002) would still be appropriate for Downs herring. The protection of the various components should be considered in the evaluation of the long-term management plan.

STECF COMMENTS: STECF agrees with the ICES advice.

2.33 Sprat (*Sprattus sprattus*) in ICES Division IIIa

FISHERIES: The fisheries in IIIa are carried out by Denmark and Sweden using trawlers and along the Swedish coast by small purse seiners. Catches of sprat in Division IIIa averaged about 70,000 t in the 1970s, but since 1982 have typically been below 20,000 t. Landings in 2013 were well below previous years at nearly 3 900t.

The directed human consumption sprat fishery serves a very small market while most sprat catches are taken in an industrial fishery, where catches are limited by herring by-catch restrictions. This combination of factors might have prevented the full utilisation of the occasional strong year-classes, which, in general, emerge and disappear very quickly in the sprat stocks.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
		2010–2012
Qualitative evaluation	?	Insufficient information
SSB (Spawning Stock Biomass)		
		2011–2013
Qualitative evaluation	?	Insufficient information

The combined survey index indicates lower abundance in the four most recent years. The exploitation status of the stock is unknown.

MANAGEMENT OBJECTIVES: No specific management objectives are known to ICES. As sprat in Division IIIa is mainly fished together with juvenile herring, the exploitation of sprat is limited by the restrictions imposed on fisheries for juvenile herring.

RECENT MANAGEMENT ADVICE: The basis for the advice this year is the same advice given for this stock in 2013. New data (landings and surveys; 1st and 3rd Quarter IBTS, HERAS) available for this stock do not change the perception of the stock. New information indicates that there are discards of sprat that are unquantified and non-negligible. ICES advises on the basis of the data-

limited approach that wanted catch[1] should be no more than 6 787 tonnes. The resulting total catch cannot be quantified as discard data are not fully available.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that wanted catches, should be no more than 6 787t. The resulting total catch cannot be quantified as discard data are not fully available.

2.34 Sprat (*Sprattus sprattus*) in the North Sea (Subarea IV)

FISHERIES: Denmark, Norway, Sweden and UK exploit the sprat in this area. The fishery is carried out using trawlers and purse seiners. There are considerable fluctuations in total landings, from a peak in 1975 of 641,000 t to a low in 1986 of around 20,000 t. In the last 10 years landings have been at or below 200,000 t. Estimated total landings in 2012 and 2013 were around 85,000 t and 65,000 t respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

MANAGEMENT OBJECTIVES: No specific management objectives are known to ICES.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{escapement}$	142 000 t	Equal to $B_{pa,}$ used in conjunction with F_{cap}.
	F_{cap}	1.2	MSY criteria based on B escapement strategy with an additional constraint on fishing mortality; F_{cap} = 1.2 (ICES, 2014a).
	F_{MSY}	Not defined.	
Precautionary approach	B_{lim}	90 000 t	B_{lim} was set to ensure that years of very good recruitment mainly occurred when the stock was above B_{lim} and years of very low recruitment only occurred when the stock was below B_{lim} (ICES, 2013).
	B_{pa}	142 000 t	$B_{pa} = B_{lim} \times \exp(\sigma \times 1.645)$, with $\sigma = 0.28$ estimated from assessment uncertainty in the terminal year (ICES, 2013).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{cap})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{escapement}$)	✓	✗	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	o	✓	Full reproductive capacity

[1] "Wanted catch" is used to describe fish that would be landed in the absence of the EU landing obligation. The "unwanted catch" refers to the component that was previously discarded.

The spawning stock has been at or above B_{pa} since 2005. Fishing mortality has shown an overall decreasing trend since 2004. SSB in 2013 is estimated to be at B_{pa}. Recruitment in 2013 is estimated to be one of the highest in the time-series.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that the wanted catch[2] of sprat from July 2014 to June 2015 should be no more than 227 000 tonnes. The resulting total catch cannot be quantified as unwanted catch data are not fully available.

MSY approach

The default ICES MSY approach for a short-lived species is an escapement strategy. However, management strategy evaluations for this stock were made in autumn 2013 and presented at WKMSYREF2 (ICES, 2014a). These evaluations clearly show that ICES escapement strategy for short-lived species (Bescapement) is not precautionary for this stock unless an additional constraint is imposed on the fishing mortality (referred to as Fcap). The optimal Fcap is 1.2. This means that the fishing mortality derived from the ICES escapement strategy should never exceed 1.2.

Following the ICES MSY approach implies fishing mortality at F_{cap} = 1.2. ICES cannot quantify the resulting catches. The wanted catch should be no more than 227 000 tonnes. There is insufficient information to determine the extent of discarding taking place.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that wanted catches, which should be no more than 227 000 t.

2.35 Pollack (*Pollachius pollachius*) in the North Sea (ICES Sub-area IV and Division IIIa)

The stock status and advice for this stock for 2015 and 2016 and remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Pollack is mainly caught as a bycatch in different fisheries. Trawl catches in the open North Sea are mainly taken in the directed saithe fisheries. Gillnets are dominating in the Norwegian fisheries where about 75% of the catches are in coastal areas. Total landings in 2013 were 1500 t. Other removals are unknown.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: There are no specific management agreements for pollack in the North Sea.

REFERENCE POINTS: No biological reference points have been proposed for pollack in the North Sea.

STOCK STATUS:

F (Fishing Mortality)		
	2009-2011	
Qualitative evaluation	?	Insufficient information
SSB (Spawning-Stock Biomass)		
	2009-2011	

[2] "Wanted catch" is used to describe fish that would be landed in the absence of the EU landing obligation. The "unwanted catch" refers to the component that was previously discarded.

Qualitative evaluation	IV - 	IV: Insufficient information
	IIIa - 	IIIa: Below possible reference points

The landings data are insufficient to evaluate stock trends and therefore the state of the stock is unknown, although information available for IIIa suggests that the stock has strongly declined and is currently at a low level in this area. New landings and survey data available for this stock do not change the perception of the stock

RECENT MANAGEMENT ADVICE New landings and survey data available for this stock do not change the perception of the stock. New information indicates that there are discards of pollack that are unquantified. ICES advice is based on the approach for data limited stocks but he resulting catches cannot be quantified. The implied landings in Subarea IV should be no more than 1300 tonnes. In Division IIIa, there should be no directed fisheries and bycatch and discards should be minimised.

Other considerations

No reliable assessment can be presented in this Ecoregion.

ICES approach to data limited stocks

For data limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For pollack in this area two situations occur: for Subarea IV, insufficient information is available on abundance or exploitation. This implies that catches should decrease by 20% in relation to the last three years average catch, corresponding to catches of no more than 1300 t.

For Division IIIa, the abundance is estimated to be at the lowest in the time series. This implies that there should be no directed fisheries and bycatch and discards should be minimised in this Division.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2015 and 2016 that catches should be no more than 1300 t in IV and there should be no directed fisheries and bycatch and discards should be minimised in Division IIIa.

2.36 Horse mackerel (*Trachurus trachurus*) in the North Sea (Divisions IIIa eastern part, IVbc, VIId).

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERY: Catches taken in Divisions IVb,c and VIId are regarded as belonging to the North Sea horse mackerel and in some years also catches from Division IIIa - except the western part of Skagerrak. Catches by the Danish industrial fleet for reduction into fishmeal and fish oil formed the majority of North Sea horse mackerel catches throughout the 1970s and 1980s. Catches were taken in the fourth quarter, mainly in Divisions IVb and VIId. The 1990s saw a drop in the value of industrial resources, limited fishing opportunities, and steep increases in fuel costs. In 2001, an individual quota scheme was introduced in Denmark, which resulted in a rapid restructuring of the fleet. Since then the fleet size has been radically reduced and now numbers less than 20% that in the 1980s; additionally, Danish North Sea horse mackerel catches have diminished. Since the 1990s, a larger portion of catches has been taken in a directed horse mackerel fishery for human

consumption by the Dutch and German freezer-trawler fleet. Denmark has traded a limited part of its quota with other EU member states for fishing opportunities for other species. However, since only a limited amount of quota is made available to other countries the TAC has been consistently underutilized in recent years (approximately 50% in 2010–2012). The total catch taken from this stock in 2012 was 21,375 tonnes, which represents a 27% decrease compared to 2011.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points are set for this stock, as there is insufficient information to estimate reference points.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	**Insufficient information**

SSB (Spawning-stock Biomass)		
	2011–2013	
Qualitative evaluation	?	**Insufficient information**

The available information, while broadly informative, is insufficient to evaluate recent stock trends and exploitation status. Therefore, the state of the horse mackerel in the North Sea is unknown. Landings in recent years (2010–2012) have been around 25 kt.

MANAGEMENT AGREEMENTS: Since 2010, the EU TAC for the North Sea area has included Divisions IVb,c and VIId. In the past, Division VIId was not considered in the North Sea TAC regulation area. The assessment area of North Sea horse mackerel also includes catches from Division IVa during the first two quarters of the year. The TAC for Division IVa is included in a different management area together with Divisions IIa, VIIa–c, VIIe–k, VIIIa, VIIIb, VIIId, VIIIe, Subarea VI, EU and international waters of Division Vb, and international waters of Subareas XII and XIV. There is no TAC for Division IIIa.

In June 2009, an agreement was concluded between contracting parties to the Coastal States on mackerel banning high grading, discarding, and slipping from pelagic fisheries targeting mackerel, horse mackerel, and herring beginning in January 2010.

RECENT MANAGEMENT ADVICE:
New data on survey indices available for this stock do not change the perception of the stock; therefore, the advice for this fishery in 2014 is the same as the advice for 2013: Based on the ICES approach to data-limited stocks, ICES advises that landings should be no more than 25,500 t. Discards are known to take place but cannot be quantified; therefore total catches cannot be calculated.

Other considerations

No quantitative assessment can be presented for this stock. Therefore, fishing possibilities cannot be projected.

ICES approach to data limited stocks

The survey index, which provides information on the development of the stock and its response to the fishery, was available for the first time this year. The survey index has not been used as the basis for advice under DLS category 3, because the lack of measures of uncertainty limits interpretation of annual changes of this index. This implies that the information available does not significantly alter the perception of the stock from last year, and therefore the advice from 2012 which was to be applied for three years is still relevant.

Advice relates to landings. Discards are known to take place but cannot be quantified, therefore total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES advice for 2014 that on the basis of the ICES approach to data limited stocks, landings should be no greater than 25,500 t.

2.37 Mackerel (*Scomber scombrus*) - North Sea spawning component

The stock summary and advice for mackerel in in the North Sea is given in Section 8.5 (Combined Southern, Western and North Sea spawning components).

2.38 Striped red mullet (*Mullus surmelutus*) in the North Sea

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: Historically, most catches have been taken by bottom trawls in a target fisheries in Division VIId. Since 2009 landings have been shared by two main fisheries, bottom trawlers and flyshooters. Discards are considered negligible.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: There are no specific management agreements for striped red mullet in the North Sea.

REFERENCE POINTS: No biological reference points have been proposed for striped red mullet in the North Sea.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation		Insufficient information

SSB (Spawning-Stock Biomass)		
	2005–2012	
Qualitative evaluation		Decreasing

The stock is mainly fished in the eastern English Channel (Division VIId) and southern North Sea. Biomass estimates from Division VIId show high variability and indicate a considerable decrease in the last three years. Abundance in the North Sea has also been low in recent years. The average of the stock size indicator (relative biomass) in the last two years (2011–2012) is 69% lower than the average of the three previous years (2008–2010). The landings follow a similar pattern over this period and have reduced since 2009.

RECENT MANAGEMENT ADVICE: New data (landings and survey data) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the

same as the advice for 2014: Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 460 tonnes. All catches are assumed to be landed.

ICES approach to data limited stocks

For data-limited stocks for which a biomass/abundance index is available, ICES uses as harvest control rule an index-adjusted status quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated to have decreased by more than 20% between the periods 2007–2009 (average of the three years) and 2010–2011 (average of the two years). This implies an decrease of catches of at most 20% in relation to the catches in the last year (ICES estimates for 2012), corresponding to catches in 2014 of no more than 575 t.

Additionally, considering that exploitation is unknown, ICES advises that catches should decrease by a further 20% as a precautionary buffer. This results in catches of no more than 460 t in 2014.

All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should be no more than 460 t.

2.39 Red gurnard (*Aspitrigla cuculus*) in the North Sea

STECF did not have access to any recent stock assessment information on red gurnard in the North Sea. Advice on red gurnard is given at the NE Atlantic regional level in Section 8.7 of this report.

2.40 Grey gurnard (*Eutrigla gurnardus*) in the Subarea IV (North Sea) and Divisions VIId (Eastern Channel) and IIIa (Skagerrak-Kattegat)

The advice for this stock for 2015 and 2016 is the same as that for 2013 and 2014 and the text below remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: In the past, grey gurnard was predominantly exploited by fleets from Belgium, Denmark, France and Sweden. Historically, landings peaked at about 46,800 t in the late 1980s with Denmark taking 99% of the landings, and then declined substantially to around 180 t by 1998. Since the beginning of the 2000's the main fishery is conducted by The Netherlands and UK and landings remained around 500 t. Reported landings for 2012 and 2013 were 600 t and around 500 t respectively. Official landings statistics, however, are not considered reliable for this species due to problems in species identification. ICES estimates the 2013 landings 1,200 t. Currently, grey gurnard is a bycatch in the fishery for demersal species mainly by beam trawlers and otter trawlers. Catches are largely discarded.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES.

MANAGEMENT AGREEMENT: There are no specific management agreements for grey gurnard in the North Sea.

REFERENCE POINTS:

No reference points have been defined.

STOCK STATUS:

F (Fishing Mortality)	
	2009–2011

Qualitative evaluation	?	Insufficient information
SSB (Spawning-stock Biomass)		
	2009–2011	
Qualitative evaluation	→	Above the long-term average

Abundance indices from Subarea IV show an increase and has been stable in the last decade. In Division VIId, the abundance has fluctuated without trend since 1988, although the biomass in Division VIId is much lower than in the North Sea. Landings data are not presented for this species because the landings were reported as one generic category of "gurnards" until 2010. Furthermore, landings data are considered only marginally informative because catches are mainly discarded.

RECENT MANAGEMENT ADVICE:

New survey data available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 and 2016 is the same as the advice for 2013 and 2014: *Based on the ICES approach for data-limited stocks, ICES advises that catches of grey gurnard should not increase from the average catch of the last three years. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result.*

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock the abundance is estimated to have been stable after an increase, which implies catches could remain at the average catch of the last three years. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result.

Other considerations

No assessment can be presented for grey gurnard in Subarea IV (North Sea) and Divisions VIId (Eastern Channel) and IIIa (Skagerrak–Kattegat). Therefore, no catch projections are available.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

STECF notes that in the past, gurnards were often landed in one generic category of "gurnards". Catch statistics are incomplete for several years: some countries reporting no landings at all, other countries reporting exceptionally high landings. Currently there is no TAC for this species in this area and it is not clear whether there should be one or several management units.

2.41 Seabass (*Dicentrarchus labrax*) in Divisions IVbc, VIIa, and VIId–h (Irish Sea, Celtic Sea, English Channel, and southern North Sea)

FISHERIES: Sea bass are targeted by pelagic pair trawlers on offshore spawning grounds during December to April, and are taken as seasonal target or bycatch by a large fleet of inshore vessels using a variety of gears. Discarding is low, except for some small-mesh trawl fleets operating inshore near nursery areas. Sea bass is an important marine recreational angling species in the UK, Ireland, France, the Netherlands, and Belgium. A moratorium on commercial fishing for this species by Irish vessels has been in effect since 1990; as a result, unavoidable catches by Irish commercial vessels are discarded.

Catch (2013) is unknown, commercial landings of 2013 were 4,132 t (UK and France: 21% bottom trawlers; 37% pelagic pair trawlers; 13% fixed/drift nets; 12% lines; 3% other gears. Other countries: 14% all gears). Discards are known to take place but cannot be fully quantified (they are likely to be in the order of 5% in weight). Recreational catch is known to be substantial but cannot be fully quantified (surveys indicate total annual removals by France, UK (England), Netherlands and Belgium of the order of 1,500 t in the last few years).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Age- and length-based analytical assessment (Stock Synthesis 3; NOAA Toolbox). Commercial landings (international landings, ages and length frequencies from catch sampling); one pre-recruit survey (UK Solent autumn survey); one bottom trawl survey (Channel Groundfish Survey); growth and maturity data from sampling of commercial catches and surveys; natural mortality (inferred from life history parameters and maximum observed ages); recreational fishing mortality inferred from recreational fishery surveys since 2009.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.13	Proxy based on $F_{35\%}$ SPR (ICES, 2014b).
Precautionary approach	B_{lim}	5,250 t	Lowest observed spawning-stock biomass (ICES, 2014b).
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

Last changed in 2014.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Above B_{lim}

Strong year classes in 1989 and some subsequent years caused a rapid increase in biomass throughout the stock area, and landings and fishing mortality in the commercial fishery also increased. The combined commercial and recreational fishery F is well above the F_{MSY} proxy.

Recruitment has been declining since the mid-2000s, and has been very poor since 2008. The combination of declining recruitment and increasing F is causing a rapid decline in biomass.

MANAGEMENT PLANS

No specific management objectives are known to ICES.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach, but cannot quantify the resulting catches. The implied total landings should be no more than 1,155 t. ICES has no basis for advising on the allocation of the advised landings to commercial and recreational fisheries. The commercial landings corresponding to the advice will depend on the recreational landings and *vice versa*.

ICES advises that a management plan is urgently needed to develop and implement measures to substantially reduce fishing mortality throughout the range of the stock.

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.13. ICES cannot quantify the resulting catches. The implied total landings (commercial and recreational) should be no more than 1,155 t in 2015. ICES has no basis for advising on the allocation of the advised landings to commercial and recreational fisheries. The commercial landings corresponding to the advice will depend on the recreational landings and *vice versa*. Discards are known to take place but cannot be quantified.

Other considerations

Advice considerations

ICES advises that a management plan for sea bass is needed. The fishing mortality needs to be reduced. The stock is likely to decline further in the short term due to recent low recruitment. In the longer term, management of sea bass fisheries could take into account the objectives and the economic and social value of the commercial and recreational fisheries that share the resource, adopting a common methodological approach to estimate the value of each fishery. The interrelationship between markets for wild-caught and farmed sea bass should be evaluated.

Management considerations

Discarding is mainly an issue at present with otter trawlers using 80–90 mm mesh in or near areas where juvenile bass are most abundant, for example in coastal waters of the eastern Channel.

Improvements to fishery selectivity are needed to allow more fish to spawn at least once before capture. This would require changes to gear designs and spatial management approaches.

As sea bass is at present a non-TAC species, there is potential for displacement of fishing effort from other species with limiting quotas. The effort of the French pelagic fisheries for sea bass during winter and spring can shift between the Bay of Biscay and the English Channel, and there is evidence for such a shift to the Channel in recent years. These developments are likely to have increased the fishing mortality on sea bass in Subarea VII.

STECF COMMENTS:

STECF agrees with the ICES landing advice. STECF however notes that the reduction of F to F_{MSY} implies the decrease of total landings by 57% in 2015 compared with advised commercial landings for 2014. STECF also notes that ICES has changed the basis of advice from Data-Limited approach to MSY approach in 2014.

3 RESOURCES OF THE CELTIC SEA AND WEST OF SCOTLAND

3.1 Norway lobster (*Nephrops norvegicus*) in ICES Div. Vb and Sub-area VI, (West of Scotland) and waters west of Ireland

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

There are no exploited *Nephrops* stocks in Div. Vb. In Sub-area VI and Divs. VIIb & VIIc (waters west of Ireland) the following functional units are considered by ICES:

FU no.	Name	ICES Divisions	Statistical rectangles
11	North Minch	VIa	44–46 E3-E4
12	South Minch	VIa	41–43 E2-E4
13	Clyde + Sound of Jura	VIa	39–40 E4-E5
16	Porcupine Bank	VIIc	31–36 D5–D6; 32–35 D7–D8
17	Aran Grounds	VIIb	34–35 D9–E0

Nephrops also occur in other areas not contained within the Functional Units. TV surveys in deep water suggest widespread distribution at low density, and surveys at Stanton Bank indicate a population there. Three *Nephrops* stocks (FUs) in Sub-area VI and one in Div. VIIb (FU 17) are currently assessed using UWTV surveys. On the basis of these, current stock abundance and harvest ratios are estimated.

MSY approach for stocks with UWTV surveys

There are no precautionary reference points defined for *Nephrops*. Under the ICES MSY framework, exploitation rates which are likely to generate high long-term yield (and low probability of stock overfishing) have been explored and proposed for each functional unit. Owing to the way *Nephrops* are assessed, it is not possible to estimate F_{msy} directly and hence proxies for F_{msy} are determined. Three stock-specific candidates for F_{msy} ($F_{0.1}$, $F_{35\%SpR}$ and F_{max}) were derived using a length-based per recruit analysis. There can be substantial differences in relative exploitation rates between the sexes in many stocks. To account for this, values for each of the candidates have been determined for males, females and the two sexes combined. The appropriate F_{msy} candidate has been selected for each Functional Unit independently according to the perception of stock resilience, factors affecting recruitment, population density, knowledge of biological parameters and the nature of the fishery (relative exploitation of the sexes and historical Harvest Rate vs. stock status).

The table below illustrates the framework against which stocks were evaluated and appropriate F_{MSY} proxies chosen. In general, $F_{35\%SPR}$ was used unless there were stock-specific justifications for either higher or lower harvest ratios.

The combined sex F_{msy} proxy should be considered appropriate provided that the resulting percentage of virgin spawner per-recruit for males or females does not fall below 20%. In such a case a more conservative sex specific F_{msy} proxy should be picked instead of the combined proxy.

		Burrow Density (average numbers/m2)		
		Low	Med	High
		<0.3	0.3-0.8	>0.8
Observed harvest rate or landings compared to stock status	>Fmax	F35%	Fmax	Fmax
	Fmax-F0.1	F0.1	F35%	Fmax
	<F0.1	F0.1	F0.1	F35%
	Unknown	F0.1	F35	F35%
Stock Size Estimates	Variable	F0.1	F0.1	F35%
	Stable	F0.1	F35%	Fmax
Knowledge of biological parameters	Poor	F0.1	F0.1	F35%
	Good	F35%	F35%	Fmax
History Fishery	Stable spatially and temporally	F35%	F35%	Fmax
	Sporadic	F0.1	F0.1	F35%
	Developing	F0.1	F35%	F35%

There may be great differences in the relative exploitation rates between the sexes for many stocks. To account for this, values for each of the candidates have been determined individually for males, females, and the two sexes combined. The combined sex F_{MSY} proxy should be considered appropriate, provided that the resulting percentage of virgin spawner-per-recruit for males or females does not fall below 20%. If this happens a more conservative sex-specific F_{MSY} proxy should be chosen instead of the combined proxy.

Where possible, a preliminary MSY $B_{trigger}$ was proposed based on the lowest observed UWTV burrow abundance, unless the stock has shown signs of stress at higher abundance (in which case a higher value is used).

Additional considerations

Management considerations

The overriding management consideration for these stocks is that management should be at the functional unit rather than the ICES subarea/division level. Management at the functional unit level should provide the controls to ensure that catch opportunities and effort are compatible and in line with the scale of the resources in each of the stocks defined by the functional units. Current management of *Nephrops* in Subarea VI (both in terms of TACs and effort) does not provide

adequate safeguards to ensure that local effort is sufficiently limited to avoid depletion of resources in functional units. In the current situation vessels are free to move between grounds, allowing effort to develop on some grounds in a largely uncontrolled way; this has historically resulted in inappropriate harvest rates from some parts.

There are also *Nephrops* catches in "other rectangles" in Division VIa, e.g. from offshore areas adjacent to Stanton Bank where Irish fishers frequently operate from the shelf edge.

There are no functional units in ICES Division VIb, but occasional small *Nephrops* landings occur.

STECF COMMENTS: STECF notes that to the West of Scotland (which comprises three *Nephrops* Functional Units (FUs)) the present aggregated management approach (overall TAC for all FUs) runs the risk of unbalanced effort distribution. Adoption of management initiatives to ensure that effort can be appropriately controlled in smaller areas within the overall TAC area (Vb & VI) is recommended. Furthermore, STECF notes that the current aggregated management of all *Nephrops* FUs in this area as a single unit is a major obstacle for a management complying with the Commissions Communication on Fishing opportunities for 2014 (COM(2013)319 final) as the rules require a TAC for each stock (in this case FU).

STECF notes that there also are *Nephrops* catches in "other rectangles" in Division VIa, e.g. from offshore areas adjacent to Stanton Bank where Irish fishers frequently operate from the shelf edge. To provide some guidance on appropriate future landings for these areas, the use of an average landings figure of around 326 tonnes could be considered (On the basis of ICES advice that catches from 'other areas' should not increase).

3.1.1 Norway lobster (*Nephrops norvegicus*) in North Minch (FU 11)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERY: The *Nephrops* fishery in this area is prosecuted entirely by UK (Scottish) vessels. Total effort by Scottish *Nephrops* trawlers has shown a gradual decreasing trend since 2002. Total *Nephrops* landings increased from about 3,000 t in 2005 to around 3800 t in 2008 but then fell in 2009 to 3497 t, to 2263 t in 2010 and 2696 t in 2011. In 2012 landings were 3388 t.

Available information indicates that landings from the late 1990s up to 2005 are most likely to be an underestimate of actual landings, but the reliability of landings figures has improved since 2006 with the introduction of buyers and sellers legislation. The *Nephrops* trawl fishery in this area takes by-catches of other species and has been observed to have extremely high discard rates of haddock and whiting in recent years. The fishery has been fairly stable over the time-series. Landings have increased in the last two years and the drop observed in 2010 seems to be mainly related to market conditions. Reported effort by all Scottish *Nephrops* trawlers has shown an increase in 2012 particularly during the first semester. It is an all-year-round fishery and creel fishing takes place mainly in the sea-loch areas, but has recently extended also to further offshore. Overall effort in terms of creel numbers is not known and there are no limits on the number of creels.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2013 is based on trends in population indicators and catch options derived from UWTV surveys. For this FU, the absolute density observed in the UWTV survey is medium (~0.59 burrows m^{-2}). Historical harvest ratios in this FU have been around those equivalent to fishing at $F_{35\%SpR}$ and landings have been relatively stable in the past thirty years. $F_{35\%SpR}$ (combined between sexes) is expected to deliver high long-term yield with a low probability of recruitment overfishing and is therefore chosen as a proxy for F_{MSY}. New size-at-maturity parameters were available at the 2013 benchmark, leading to revisions in the harvest rate reference points.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{trigger}$	541 million individuals	Bias-adjusted lowest observed UWTV survey estimate of abundance
	F_{msy}	10.9% harvest rate	Equivalent to $F_{35\%SpR}$ combined sex. F_{MSY} proxy based on length-based yield-per-recruit analysis.
Precautionary Approach	Not agreed		

Harvest ratio reference points (2013):

	Male	Female	**Combined**
F_{max}	11.1	23.0	13.2
$F_{0.1}$	6.9	12.8	7.7
$F_{35\%SpR}$	8.2	19.6	**10.9**

STOCK STATUS:

F (Fishing Mortality)	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Not defined

The stock has been above MSY $B_{trigger}$ for more than 15 years. The results from the UWTV survey indicate that the abundance has decreased in 2012 and recovered in 2013 to an abundance similar to those observed in 2010–2011. The historical harvest ratios (removals/UWTV abundance) have fluctuated around the F_{MSY} proxy. The harvest ratio in 2012 increased to 17.9% and is above the F_{MSY} proxy.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 3485 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 3702 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 25% of the total number discarded for this stock.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach:

Following the ICES MSY approach implies the harvest ratio for the North Minch functional unit should be reduced to less than 10.9%, resulting in landings of no more than 3485 tonnes in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 25% discard survival), this implies total catches of no more than 3702 tonnes.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

Recent work using VMS has refined the estimate of the area. Results from a recent study on mapping the spatial extent of *Nephrops* habitat in the North Minch sea lochs indicate that the muddy habitat in the lochs is only a very small proportion of the total *Nephrops* grounds in this FU.

The minimum landing size for *Nephrops* in Division VIa is 20 mm carapace length. Discarding of both undersize and poor quality *Nephrops* sometimes takes place in this FU. Discard rates have been variable but generally lower than 20%. The mean sizes in the length compositions of larger individuals (>35 mm CL) are relatively stable, but the mean weight in landings has increased markedly in 2010 and decreased again in the last two years. To dampen this variability, the time-series average (1999–2012) was used as input for the mean weight in landings for the catch forecasts.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 3485 tonnes and catches of no more than 3702 tonnes.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 39% decrease on the status quo harvest ratio (and 39% less in landings) from this functional unit.

STECF notes that the TR2 fleet in this area has been observed to have extremely high discard rates of haddock and whiting in recent years and suggests that selectivity should be improved.

3.1.2 Norway lobster (*Nephrops norvegicus*) in South Minch (FU 12)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERY: The *Nephrops* fishery in this area is prosecuted largely by UK vessels with a small proportion of the landings by Irish vessels. Reported effort by all Scottish *Nephrops* trawlers has shown a gradual decreasing trend since 2001. Reported effort by all Scottish *Nephrops* trawlers has shown an increase in 2012, particularly during the first semester. Inshore trawlers are mainly small, but in the offshore areas of this FU larger boats operate. Creel fishing takes place mainly in inshore areas (including the sea-lochs), but has extended further offshore in recent years. Overall effort in terms of creel numbers is not known and there are no limits on the number of creels.

Total *Nephrops* landings from this FU were above 5000 t in 2007 and 2008 but decreased to around 4300 t in 2009 and further declined to around 3700 t in 2010 and 2011.The 2012 landings amount to about 3900 t. The decline from 2007 to 2011 is apparently largely due to market conditions. Available information indicates that landings from the late 1990s up to 2005 are most likely to be

underestimates of actual landings. The reliability of landings figures improved from 2006 with the introduction of buyers and sellers legislation. The *Nephrops* trawl fishery in this area takes by-catches of other species and has been observed to have extremely high discard rates of haddock and whiting in recent years. Larger vessels operating on the western limits of the ground generally take higher by-catches of fish.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2013 is based on trends in population indicators and catch options derived from UWTV surveys.

For this FU, the absolute density observed in the UWTV survey is medium (~ 0.44 burrows m^{-2}). The fishery in this area has been in existence since the 1960s. Historical harvest ratios in this FU have been variable, but generally around $F_{35\%SPR}$. $F_{35\%SPR}$ (combined between sexes) is expected to deliver high long-term yield with a low probability of recruitment overfishing and is therefore chosen as a proxy for F_{MSY}.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	1016 million individuals	Bias-adjusted lowest observed UWTV survey estimate of abundance
	F_{msy}	12.3% harvest rate	Equivalent to $F_{35\%SPR}$ combined sex. F_{MSY} proxy based on length-based yield-per-recruit analysis.
Precautionary Approach	Not agreed		

Harvest ratio reference points (2011):

	Male	Female	Combined
F_{max}	13.3	26.8	16.1
$F_{0.1}$	7.8	13.8	8.7
$F_{35\%}$	9.6	18.3	12.3

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	

MSY ($B_{trigger}$)	✓	✗	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Not defined

The stock fell below MSY $B_{trigger}$ in 2012 but increased in 2013 and is now above MSY $B_{trigger}$. The results from the TV survey indicate that the abundance has decreased in 2012 and recovered in 2013 to levels similar to those observed in 2011. The harvest ratio (removals/UWTV abundance) has increased to 15.8% in 2012 and is now above F_{MSY} proxy.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 5211 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 5394 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 25% of the total number discarded for this stock.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach:

Following the ICES MSY approach implies that the harvest ratio for the South Minch functional unit is reduced to less than 12.3%, resulting in landings of no more than 5211 tonnes in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming a 25% discard survival), this implies total catches of no more than 5394 tonnes.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

Work comparing the area based on available VMS and sediment data on which the UWTV survey is based showed no major differences between the two; the original area of ground was therefore retained for the UWTV survey. However, the survey should still be considered as a minimum estimate since areas of suitable sediment in the sea lochs are not included.

The minimum landing size for *Nephrops* in Division VIa is 20 mm carapace length. Discarding of both undersize and poor quality *Nephrops* sometimes takes place in this FU. Discard rates have been variable but generally lower than 20%. The mean sizes in the length compositions of smaller individuals (< 35 mm CL) has increased consistently, suggesting low recruitment in the last four years. The mean weight in landings has increased markedly in recent years and the time-series average (1999–2012) was used as input for the mean weight in landings for the catch forecasts.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 5211 tonnes and catches of no more than 5394 tonnes.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 22% decrease on the status quo harvest ratio (and 22% less in landings) from this functional unit.

STECF notes that the TR2 fleet in this area has been observed to have extremely high discard rates of haddock and whiting in recent years and suggests that selectivity should be improved.

3.1.3 Norway lobster (*Nephrops norvegicus*) in Firth of Clyde (FU 13), including Sound of Jura.

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERY: Trawling is the predominant fishing method and fishing takes place all year round. An increasing number of creel boats operate in the Clyde due to temporal and area bans on trawling. *Nephrops* discard rates from trawl fleets in this functional unit are higher than in other FUs in Division VIa. *Nephrops* landings from FU 13 are taken entirely by UK vessels. Total *Nephrops* landings increased in the recent years, from around 3,400 t in 2005 to around 6500 t in 2007, but decreased in the two following years. However, landings increased again to 6584 t in 2012. Available information indicates that landings from the late 1990s up to 2005 most likely are underestimates of actual landings, but the reliability of landings figures has improved from 2006 with the introduction of buyers and sellers legislation. The *Nephrops* trawl fishery in this area takes by-catches of other species, mainly haddock, whiting and some cod.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2013 is based on trends in population indicators and catch options derived from UWTV surveys. Underwater TV surveys have been conducted for the Firth of Clyde subarea every year since 1995. Confidence intervals around the abundance estimates are stable throughout the series and relatively low compared with other FUs in Division VIa. Underwater TV surveys for the Sound of Jura subarea have been more fragmented and sampling is at a relatively low level; confidence intervals are larger.

REFERENCE POINTS:

Reference points – Firth of Clyde

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	579 millions	Lowest observed abundance estimate
Approach	F_{msy}	16.4% harvest rate	Equivalent to F_{max} combined sex. F_{MSY} proxy based on length-based yield-per-recruit analysis.
Precautionary Approach	Not agreed	Not defined	

Reference points – Sound of Jura

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	Not defined	
Approach	F_{msy}	14.5% harvest rate	Equivalent to $F_{35\%SpR}$ combined sex
Precautionary Approach	Not agreed	Not defined	

Harvest ratio reference points (2011):

	Male	Female	Combined
F_{max}	13.6	34.0	16.4
$F_{0.1}$	8.7	21.1	9.7
$F_{35\%}$	10.7	25.7	14.5

STOCK STATUS:

Firth of Clyde

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Not defined

Sound of Jura

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)		
	2011 -2013	
MSY ($B_{trigger}$)	?	Not defined
Precautionary approach (B_{pa},B_{lim})	?	Not defined
Qualitative evaluation	↘	Decreasing

UWTV abundance remains above the MSY $B_{trigger}$. Harvest rates (removals/UWTV abundance) for *Nephrops* in the Firth of Clyde have increased in 2012 to 26.0% and remain above the proposed F_{MSY} proxy.

Harvest rates (removals/UWTV abundance) for *Nephrops* in the Sound of Jura have been well below the proposed F_{MSY} proxy in recent years. UWTV abundance remains higher than observed at the start of the series, but the series is too short and patchy to propose a MSY $B_{trigger}$.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 6265 tonnes (5744 tonnes for Firth of Clyde and 521 tonnes for Sound of Jura). If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 6959 tonnes (6382 tonnes for Firth of Clyde and 577 tonnes for Sound of Jura). Note that this figure includes discards expected to survive the discarding process – assumed to be 25% of the total number discarded for this functional unit.

In order to ensure the stock is exploited sustainably, management of *Nephrops* should be implemented at the functional unit level. In this FU the two subareas imply that additional controls maybe required to ensure that the landings taken in each subarea are in line with the advice.

Other considerations

MSY approach:

Following the ICES MSY approach implies the harvest ratio for the Firth of Clyde subarea should be reduced to less than 16.4%, resulting in landings of no more than 5744 tonnes in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 25% discard survival), this implies total catches of no more than 6382 tonnes.

Following the ICES MSY approach implies the harvest ratio for the Sound of Jura subarea should be reduced to be less than 14.5%, resulting in landings of no more than 521 tonnes in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 25% discard survival), this implies total catches of no more than 577 tonnes.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

An increasing number of creel boats operate in the Clyde. Creeling activity often takes place during the weekend when the trawlers are not allowed to fish. One third of the creelers operate throughout the year, the rest prosecute a summer fishery.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stocks and the advice for 2014 that to comply with MSY objectives landings should be no greater than 5744 tonnes and catches of no more than 6382 tonnes in Firth of Clyde. Landings and catches in Sound of Jura should be no more than 521 t and 577 t respectively.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 37% decrease on the status quo harvest ratio (and 37% less in landings) from this functional unit (Firth of Clyde).

STECF notes that the landings corresponding to ICES advice for 2014 imply a 1800% increase on the status quo harvest ratio (and 1800% more in landings) from this functional unit (Sound of Jura).

3.1.4 Norway lobster (*Nephrops norvegicus*) in FU 16, Porcupine Bank, Divisions VIIb,c,j,k

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The fishery takes place throughout the year with a peak between April and July. A seasonal closure covering much of the stock distribution area has been in place between 1 May and 31 July each year from 2010 to 2012. In 2013 the closure was only in place in the month of May. Most vessels are relatively large (between 20 and 35 m in total length) multi-purpose otter trawlers using single or twin rigs. Freezing of catches at sea has become increasingly prevalent since 2006. The majority of landings are taken by Irish, Spanish and to a lesser extent, UK vessels. There are concerns about the accuracy of the landings statistics for some fleets. Fishing effort directed at *Nephrops* will also have bycatches of hake, megrim, and anglerfish in mixed fisheries. Reported total landings for this FU have decreased significantly in recent years from 2186 t in 2007 to only 825 t in 2009. Thereafter landings steadily increase again to 1260 t in 2012 t (including estimated unallocated landings).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based on indicators and an UWTV survey as last year. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information.

This year´s advice is based on the MSY approach, as last year

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	?	?	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)		
	2012–2013	
MSY ($B_{trigger}$)	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	Undefined
Qualitative evaluation	→	Stable (based on UWTV abundance)

UWTV surveys for FU 16 were carried out in 2012 and 2013; these provide abundance estimates for this stock. The 2012 harvest ratio (removals/UWTV abundance) is estimated to be 3.2%, which is below the F_{MSY} proxy (5%). Other indicators show that the exploitation rates increased during the 2000s but declined significantly in 2011 and remain low. Bottom trawl survey cpue increased significantly in 2010 and this has been linked to a stronger recruitment first observed in the survey in 2009.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that catches from FU 16 in 2014 should be no more than 1848 tonnes. All catches are assumed to be landed.

To protect the stock in this functional unit, management should be implemented at the functional unit level.

Other considerations:

MSY approach

No MSY $B_{trigger}$ has been identified for this FU. Following the ICES MSY approach implies a harvest ratio for the FU 16 that is less than 5%, resulting in catches of no more than 1848 t in 2014. All catches are assumed to be landed.

Additional considerations

The advice takes into account the 2013 UWTV survey results**.**

Since 2011 a maximum limit on landings from FU 16 is included in the TAC regulation (the "of which limit"). This has increased the risk of highgrading and area-misreporting in this fishery. Area misreporting and highgrading in the fishery should be discouraged through management measures.

A seasonal closed area (1 May–31 July) was in place between 2010 and 2012. The duration of the closure was reduced to one month (May) in 2013. The closure has been respected by the fleet and has therefore afforded some protection to the majority of the stock area (~75%). For this part of the stock area fishing effort and mortality has been reduced at a time of peak female emergence and typically high lpue and landings. The closure will also have inadvertently concentrated effort and fishing mortality in the ~25% of the stock area that is not currently covered by the closure. Survey information indicates that abundance was 2.5 times higher inside the closed area than outside in 2011.

Productivity of deep-water *Nephrops* stocks is generally lower than in shelf waters, though individual *Nephrops* grow to relatively large sizes and attain high market prices. Other deep-water *Nephrops* stocks off the Spanish and Portuguese coast have collapsed and have been subject to recovery measures for several years, e.g. in FUs 25, 26, 27, and 31. Recruitment in *Nephrops* populations in deep water may be more sporadic than for shelf stocks with strong larval retention mechanisms. This makes these stocks more vulnerable to overexploitation and potential recruitment failure as has been observed on the Porcupine Bank over the last decade.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 1848 tonnes (All catches are assumed to be landed).

STECF notes that the catches and landings are uncertain. The unallocated catches include an estimate of Spanish landings.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 56% increase on the status quo harvest ratio (and 56% more in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

3.1.5 Norway lobster (*Nephrops norvegicus*) in FU 17, Aran Grounds (Division VIIb)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Reported landings (almost entirely by Irish vessels) from this FU were around 1000 t in 2010, but decreased to 600 t in 2011. The preliminary 2012 landings amount again to 1135 t. In the Aran Grounds landings and effort by twin rig vessels have increased to constitute more than 90 % of the fishery. Effort decreased in 2009 due to decommissioning of several vessels that

actively participated in the fishery but effort in 2010 increased again. In recent years several newer vessels specialising in *Nephrops* fishing have participated in this fishery. These vessels target *Nephrops* on several other grounds within the TAC area and move around to optimise catch rates. Since the introduction of effort management associated with the cod long term plan (EC 1342/2008) there have been concerns that effort could be displaced towards the Aran and other *Nephrops* grounds where effort control has not been put in place.

In the last few years the fishery has exploited more of the male component of the stock as a higher proportion of catches have been taken in the autumn.

The *Nephrops* trawl fishery takes bycatches of other species, especially plaice, but also, whiting, cod, hake, megrim and monkfish.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based on indicators and an UWTV survey as last year. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information.

This year´s advice is based on the MSY approach as was done last year.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{msy}	HR 10.5%	Equivalent to $F_{35\%\ SPR}$ for combined sex in 2010
Precautionary Approach			No reference points are defined

Harvest ratio reference points (2010):

	Male	Female	Combined
F_{max}	9.8%	13.0%	11.1 %
$F_{0.1}$	6.4%	9.1%	7.2 %
$F_{35\%SpR}$	8.4%	12.8%	10.5 %

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)	
	2011–2013

MSY ($B_{trigger}$)	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	Undefined
Qualitative evaluation	↘	Decreasing

The abundance decreased significantly in 2012 and the 2013 survey estimate is not significantly different (although it is the lowest in the time-series). The harvest rate (removals/UWTV abundance) has increased significantly to 19.2% in 2012 and is now above the F_{MSY} proxy.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 591 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 669 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 10% of the total number discarded for this stock.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations:

MSY approach

No MSY $B_{trigger}$ has been identified for this FU. Following the ICES MSY approach for the Aran Grounds FU 17 implies a harvest ratio of less than 10.5%, resulting in landings of no more than 591 t in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 10% discard survival), this implies total catches of no more than 669 t.

Additional considerations:

The advice takes into account the 2013 UWTV survey results.

The low abundance in 2012 and 2013 cannot be linked to causative factors as yet. Discard rates were a little lower in 2012, but the mean size data on the survey or in the fishery does not suggest weak recruitment or other problems in the stock.

Total discards of *Nephrops* and other organisms by the *Nephrops* trawl fleet is around 47% of the total catch by weight. The main discards are small *Nephrops*. The main fish species discarded are dogfish, haddock, whiting, and megrim.

The proportion of discarded *Nephrops* is substantial. On average over the last three years, around 19% (in numbers) or 12% (in weight) of the *Nephrops* caught are estimated to have been discarded.

STECF COMMENTS: *STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 591 tonnes and catches of no more than 669 tonnes.*

STECF notes that the landings corresponding to ICES advice for 2014 imply a 45% decrease on the status quo harvest ratio (and 45% less in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that in recent years several newer vessels specialising in Nephrops fishing have participated in this fishery. These vessels target Nephrops on several other grounds within the TAC area and move around to optimise catch rates. Since the introduction of effort management associated with the cod long term plan (EC 1342/2008) there have been concerns that effort could be displaced towards the Aran and other Nephrops grounds where effort control has not been put in place.

3.2 Norway lobster (*Nephrops* norvegicus) in Celtic and Irish Seas

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

Norway lobster in this region contains 5 **Functional** Units:

FU no.	Name	ICES Divisions	Statistical rectangles
14	Irish Sea East	VIIa	35–38E6; 38E5
15	Irish Sea West	VIIa	36E3; 35–37 E4–E5; 38E4
19	Ireland SW and SE coast	VII,g,j	31–33 D9–E0; 31E1; 32E1–E2; 33E2–E3
20–21	Labadie,Baltimore, Jones and Cockburn	VIIg,h	28–30 E1; 28–31 E2; 30E3
22	Smalls	VIIg,f	31–32E2, 31–32E4

Of these, FU 14 (Irish Sea E.), FU 15 (Irish Sea W.), FU19 (Ireland SW and SE coast) and FU 22 (Smalls) are currently assessed on basis of UWTV surveys. On basis on the UWTV surveys current stock abundance and harvest ratios are estimated.

MSY approach

Most functional units are monitored by underwater TV (UWTV) surveys, in which burrows are counted by means of video analysis. For these FUs, MSY reference points for fishing mortality have been evaluated. No precautionary reference points have been defined for *Nephrops*.

Under the ICES MSY approach, exploitation rates likely to generate high long-term yield (and low probability of stock overfishing) have been explored and proposed for each functional unit. Owing to the way *Nephrops* are assessed, it is not possible to estimate F_{MSY} directly and hence proxies for F_{MSY} are determined. Three candidates for F_{MSY} proxies are $F_{0.1}$, $F_{35\%SpR}$, and F_{max}. There may be strong differences in relative exploitation rates between the sexes for many stocks. To account for this, values for each of the candidates have been determined for males and females separately, and for the two sexes combined. The appropriate F_{MSY} candidate has been selected for each functional unit independently according to the perception of stock resilience, factors affecting recruitment, population density, knowledge of biological parameters, and the nature of the fishery (relative exploitation of the sexes and historical harvest rate versus stock status).

A decision-making framework based on the table below was used in the selection of preliminary stock-specific F_{MSY} proxies. These may be modified following further data exploration and analysis. The combined sex F_{MSY} proxy should be considered appropriate provided that the resulting percentage of virgin spawner-per-recruit for males or females does not fall below 20%. In such a case a more conservative sex-specific F_{MSY} proxy should be chosen over the combined proxy.

Burrow Density (average numbers/m2)

		Low	Med	High
		<0.3	0.3-0.8	>0.8
Observed larvest rate or landings compared to stock status	>Fmax	F35%	Fmax	Fmax
	Fmax-F0.1	F0.1	F35%	Fmax
	<F0.1	F0.1	F0.1	F35%
	Unknown	F0.1	F35	F35%
Stock Size Estimates	Variable	F0.1	F0.1	F35%
	Stable	F0.1	F35%	Fmax
Knowledge of biological parameters	Poor	F0.1	F0.1	F35%
	Good	F35%	F35%	Fmax
History Fishery	Stable spatially and temporally	F35%	F35%	Fmax
	Sporadic	F0.1	F0.1	F35%
	Developing	F0.1	F35%	F35%

Preliminary MSY $B_{trigger}$ reference points were proposed at the lowest abundance observed in the UWTV burrow abundance, unless the stock has shown signs of stress at higher abundance (in which case a higher value is used). However, the time-series of surveys in Subarea VII are too short for that. For FU 15, where a longer series of survey trawl cpue was available; this was used to estimate a preliminary MSY $B_{trigger}$.

Data limited stocks

The assessments and advice for *Nephrops* stocks in FUs 14 and 15 (Irish Sea), 16 (Porcupine Bank), 17 (Aran Grounds), 19 (southeast and southwest coast of Ireland), and 22 (the Smalls) are primarily based on abundance estimates from underwater TV (UWTV) surveys together with fishery landings data and estimates of quantities of discards (from which dead discards are calculated). Additional indicators of changes in stocks are derived from trends in length compositions and sex ratio in the catches, fishery lpue, and (for FUs 15 and 16) trawl survey catch rates.

The advice for FUs 20–21 (Celtic Sea) is the same as last year's advice and is based on a range of indicators of stock trends, including fishery lpue, trawl survey catch rates, size compositions, and sex ratio. This advice applies ICES approach to data-limited stocks (stock category 4.1.4).

The advice for FU 18 and 'other rectangles' also follows ICES approach to data-limited stocks, and is based on a 20% reduction (precautionary buffer) compared to the average landings of the last three years (2010–2012), according to category 6.2 (ICES, 2012). No information on discards is available for FU 18 and 'other rectangles'. Landings from 'other rectangles' are estimated because no Spanish landings have been reported to ICES in 2011 and 2012 for this area. Prior to 2011 the Spanish landings represented around one third of the total landings from 'other rectangles'.

For FUs 14, 15, 16, 17, 19, and 22, the following procedure is adopted for providing assessment and advice based on UWTV survey estimates:

- Total population numbers are estimated from the UWTV surveys, including adjustments for a range of biases associated with the method. At the benchmark meetings (ICES, 2009, 2013a) it was proposed that the UWTV surveys provide abundance estimates for *Nephrops* of 17 mm carapace length and over.
- Historical harvest ratios are calculated as the ratio of total dead catch numbers (landings and dead discards) to population numbers from the UWTV survey in each year.
- Recent fishery length compositions (landings and dead discards) are analysed using a length-based assessment model to estimate population numbers and fishing mortality-at-length for *Nephrops* of 17 mm carapace length and over. This method assumes that the length compositions are representative of a population at equilibrium. The analysis is done separately for males and females using stock-specific growth and maturity parameters.
- Yield-per-recruit and spawning biomass-per-recruit curves are derived for male and female *Nephrops*, based on fishery selectivity parameters from the length-based assessment model. The harvest ratios associated with potential F_{MSY} proxies (e.g. $F_{0.1}$, F_{max}, $F_{35\%SPR}$) for males, females, and for both sexes combined are computed. These are conditional on a fishery selectivity pattern that includes fishing mortality due to landings and dead discards of *Nephrops* in the years covered by the assessment model.

Catch options tables for 2014 are derived for F_{MSY} proxy and other options by applying the appropriate harvest ratios to the population numbers estimate from the most recent UWTV survey. This assumes that population numbers remain stable in the interim year. Landings are derived from the resultant total catch numbers after multiplying by the recent average value for proportion retained and mean weight in the landings.

STECF COMMENTS: The management approach with an aggregated TAC is a major obstacle for the application of the rules in the Commissions Communication on Fishing opportunities for 2014 (COM(2013) 319-FINAL) which requires a TAC for each stock (in this case FU). It furthermore runs the risk of unbalanced effort distribution. This is known to have been a particular problem in the Porcupine bank (FU 16) in the past, where large increases in effort were followed by a substantial decline in the stock (and subsequently quotas were introduced for the FU 16 component of Sub-area VII for 2011).

STECF notes that there are also *Nephrops* catches in "other rectangles" in Sub-area VII (including the north-west coast of Ireland which has previously been treated as a separate FU (18)). To provide some guidance on appropriate future landings for these areas, the use of an average landings figure (2010-2012) of around 235 tonnes could be considered (On the basis of ICES advice that catches from 'other areas' should not increase).

3.2.1 Norway lobster (*Nephrops norvegicus*) in FU 14, Irish Sea East (Division VIIa)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Prior to 2007 landings from this FU were believed to be underreported. However, new legislation in 2007 increased the reliability of the landings data. The landings have fallen from a peak of 960 t in 2007 to 530 t in 2012. The fleet of vessels targeting *Nephrops* in 2012, with mesh sizes of 70–99 mm and where the weight of *Nephrops* landed is more than 25% of the total landing, consisted of around 25 English vessels almost entirely single-otter trawling and around 48 generally larger Northern Irish vessels, over 56% of which fish multi-rig trawls. The multi-riggers take around one third of the landings. 80 mm codends are commonly used for both types of trawl. The fishery

takes place mainly in spring and early summer, when male *Nephrops* predominate. The UK *Nephrops*-directed effort in FU 14 has declined since 2007 and is estimated in 2012 to be at its lowest value since 1974. The *Nephrops* trawl fisheries take by-catches of other species especially plaice, but also whiting and cod.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2013 is based UWTV surveys of absolute abundance. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information. The basis for the assessment and advice is the same as last year, i.e. based on the MSY approach.

REFERENCE POINTS:

	Type		***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$		Not defined	No available reference. UWTV time series too short.
	F_{msy}		Harvest ratio 9.8 %	Equivalent to $F_{0.1}$ for combined sexes.
Precautionary Approach	Not defined			

Harvest ratio reference points (2010):

	Male	Female	Combined
F_{max}	15.8%	17.4%	16.4%
$F_{0.1}$	9.6%	10.2%	9.8%
$F_{35\%SpR}$	12.5%	13.5%	13.0%

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)		
	2011–2013	
MSY ($B_{trigger}$)	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	Undefined

Qualitative evaluations		Stable

The abundance of *Nephrops* in FU 14 is stable with the exception of 2012, where there has been an increase. There is not a long enough time-series to determine a candidate for MSY $B_{trigger}$. The current harvest rate (removals/UWTV abundance) is below the F_{MSY} proxy.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that landings from FU 14 in 2014 should be no more than 951 tonnes. If total discard rates do not change from the average of 2006–2008, this implies total catches of no more than 1131 tonnes. For this FU, no discards are expected to survive the discarding process.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations:

MSY approach

No MSY $B_{trigger}$ has been identified for this FU. Following the ICES MSY approach implies that the harvest ratio for FU 14 should be less than 9.8%, resulting in landings of no more than 951 t in 2014. If discard rates do not change from the average of 2006–2008 (assuming 0% discard survival), this implies total catches of no more than 1131 t in 2014.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

The *Nephrops* trawl fishery takes bycatches of other species, especially plaice, but also whiting and cod. Selectivity of this fishery needs to be improved to reduce bycatches of cod, whiting, and undersized plaice.

Although up-to-date discard rate estimates are not available due to insufficient sampling, information from 2006-2008 (on which catch options for FU 14 are based), indicate that the proportion of discarded Nephrops is substantial. On average during 2006-2008, around 28% (in numbers) or 16% (in weight) of the *Nephrops* caught are estimated to have been discarded.

The fishery peaks in spring/summer. Some UK vessels temporarily relocate, targeting the Farn Deeps *Nephrops* fishery on the east coast of England in the winter months.

***STECF COMMENTS*:** STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 951 tonnes and catches of no more than 1131 tonnes.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 152% increase on the status quo harvest ratio (and 152% more in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that by-catches of cod, whiting and undersized plaice occur in this fishery and suggests that selectivity of this fishery should be improved.

3.2.2 Norway lobster (*Nephrops norvegicus*) in FU 15, Irish Sea West (Division VIIa)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Prior to 2007, landings from this FU are believed to be underreported. However, new legislation in 2007 increased the reliability of the landings data. Estimated landings in 2008 were

more than 10500 t from the Irish Sea West. Landings in 2009 and 2010 decreased to around 9000 t but increased again to more than 10100 t in 2011 and to 10527 t in 2012. Most of the landings are taken by the UK and the Republic of Ireland. The gears used are a mixture of single- and twin-rig otter trawls. The use of specified species-selective gears has been mandatory for all Irish vessels since March 2012 and similar conditions were introduced in October 2012 for the UK (Northern Ireland) vessels. Some Irish vessels started using multi (quad) rig trawls in 2012. Provisional data suggest a ~30% increase in *Nephrops* catch rates and a reduction in fish bycatch of ~30% due to the lower headline height.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment in 2013 is based on trends in population indicators and catch options derived from UWTV surveys as last year. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information. The basis for the assessment and advice is the same as last year, the MSY approach.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	3 billion individuals	Minimum abundance observed based in a scaled trawl survey
Approach	F_{msy}	HR 17.1%	Equivalent to F_{max} for combined sexes in 2010.
Precautionary Approach	Not defined		

Harvest ratio reference points (2010):

	Male	Female	Combined
F_{max}	17.1%	17.1%	17.1%
$F_{0.1}$	11.0%	10.2%	10.6%
$F_{35\%SpR}$	14.1%	12.7%	13.4%

STOCK STATUS:

F (Fishing Mortality)	2010	2011	**2012**	
MSY (F_{MSY})	✓	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

Since 2003 stock abundance has been above MSY $B_{trigger}$. Recent harvest rates (removals/UWTV abundance) have fluctuated around the F_{MSY} proxy and are now above it.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 8244 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 9914 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 10% of the total number discarded for this stock.

In order to ensure the stock in this functional unit is exploited sustainably, management should be implemented at the functional unit level.

Other considerations:

MSY approach

Following the ICES MSY approach implies that the harvest ratio for the western Irish Sea FU 15 is reduced to less than 17.1%, resulting in landings of no more than 8244 t in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 10% discard survival), this implies total catches of no more than 9914 t.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

The Nephrops trawl fishery takes bycatches of other species, especially plaice, but also whiting and cod. In response to the long-term management plan for cod (EC 1342/2008), Northern Ireland and Ireland have introduced more species-selective gears primarily to reduce bycatch of cod, but the devices thus far introduced are also know to reduce discards of other species. Despite this, selectivity of this fishery needs to be further improved to reduce bycatches of juvenile whiting in particular.

The proportion of discarded Nephrops is substantial. On average over the last three years, around 28% in numbers (or 17% in weight) of the Nephrops caught are estimated to have been discarded.

The FU 15 Nephrops fishery first developed in the late 1950s. The environment in the Western Irish Sea is very suitable for Nephrops, with a large mud patch and a gyre that retains the larvae over the mud patch, thus ensuring good recruitment. The ground can be characterized as an area of very high densities of small Nephrops. All available information indicates that size structure of catches appears to have changed little since the fishery first began.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 8244 tonnes and catches of no more than 9914 tonnes.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 14% decrease on the status quo harvest ratio (and 14% less in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the Nephrops trawl fishery takes bycatches of other species, especially plaice, but also, whiting and cod. Selectivity of this fishery needs to be improved to reduce bycatches of cod, whiting and undersized plaice.

3.2.3 Norway lobster (*Nephrops norvegicus*) in FU19, SW and SE Ireland (Divisions VII g, j)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Reported landings for this FU were 833 t in 2009, but decreased to 608 t in 2011. The reported landings for 2012 amount to 770t. The *Nephrops* fishery in this functional unit is mainly an otter trawl fishery using single- and twin-rigs and a codend mesh size of 80–99 mm. Similar to the situation in Aran Grounds the most recent change in the fishery is the proportion of twin-rig vessels, which has increased to over 90 % of the fleet in the past eight years. This implies a large increase in effective effort, even if such an increase is not observed in the nominal effort figures.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The 2013 assessment is based on data from UWTV survey begun in 2011. The assessment is based on indicators and an UWTV survey as last year. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information.

Last year's advice was based on the MSY approach. This year's advice is on the same basis

REFERENCE POINTS:

	Type	Value	Technical basis
MSY	MSY Btrigger	Not defined	
Approach	FMSY	HR 7.5%	Equivalent to F0.1 for combined sex in 2012
Precautionary Approach	Not defined		

Harvest ratio reference points (2012):

	Male	Female	Combined
F_{max}	10.4%	21.9%	12.7 %
$F_{0.1}$	6.5%	14.2%	7.5 %
$F_{35\%SpR}$	8.3%	21.8%	12.1 %

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	?	✓	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)		
	2011–2013	
MSY ($B_{trigger}$)	?	Undefined

Precautionary approach (B_{pa},B_{lim})		Undefined
Qualitative evaluation		Decreasing

Recent harvest rates (removals/UWTV abundance) are around the F_{MSY} proxy. The time-series of reliable abundance estimates is too short to detect a significant trend within the uncertainty bounds, but appears to be decreasing.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 521 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 618 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 10% of the total number discarded for this stock.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach

No MSY $B_{trigger}$ has been identified for this FU. Following the ICES MSY approach implies the harvest ratio for FU 19 should be reduced to less than 7.5%, resulting in landings of no more than 521 t in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 10% discard survival), this implies total catches of no more than 618 t.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

Management considerations

The abundance estimates and the F_{MSY} harvest rate are considered conservative; the time-series of UWTV observations is short, and scientific knowledge about *Nephrops* populations and fisheries in this area is limited but improving.

Nephrops fisheries in this area are fairly mixed, landing also megrim, anglerfish, haddock, and other demersal species. Around 44% of the total catch by weight is discarded. The main discarded fish species are haddock and boarfish (Anon., 2011).

The proportion of discarded *Nephrops* is substantial. On average over the last three years, around 29% (in numbers) or 16% (in weight) of the *Nephrops* caught are estimated to have been discarded.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 521 tonnes and catches of no more than 618 tonnes.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 20% decrease on the status quo harvest ratio (and 20% less in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the *Nephrops* fisheries in this area are fairly mixed also landing megrim, anglerfish, haddock and other demersal species. The main discarded species are haddock, whiting and dogfish.

3.2.4 Norway lobster (*Nephrops norvegicus*) in FU 20, Celtic Sea (Labadie, Baltimore, and Galley) and in FU 21, Celtic Sea (Jones and Cocburn)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: There are three Functional Units in the Celtic Sea area but FU 20 and 21 are treated together. Landings from these Functional Units are reported by France, the Republic of Ireland and the UK, the main contributors being France and Ireland. In 2009 total reported landings from all 2 FUs amounted to more than 3000 t, but have since decreased to 1189 t in 2012. There has been a considerable decrease in French landings and effort (due to decommissioning) whilst Irish landings have increased. There has also been increasing effort by Irish vessels targeting *Nephrops* in the Celtic Sea in recent years. Discarding and high-grading takes place, but varies between fleets and areas

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. For FUs 20 and 21, The advice is based on a calculation of potential landing options and harvest rates given the known surface area of Nephrops habitat and assumed potential densities of the functional unit.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	hole FU20-21) harvest rate	Not defined	
Precautionary Approach		Not defined	

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation		Decreasing

SSB (Spawning Stock Biomass)		
	2009–2011	
Qualitative evaluation		Unknown

For the FU 20-21 stock component, for a long period, the stock was considered to be stable based on long term indicators (lpue, mean size, discard rates). There have been indications of strong

recruitment in recent years (e.g. 2006) resulting in an increase in commercial lpue for Irish and for French trawlers in 2008 and 2009. Lpue decreased in the last two years suggesting a decline in abundance since the peak in 2008–2009. Landings in 2010 and 2011 have declined substantially (potentially explained by a decreased targeting of Nephrops by the French fleet).

RECENT MANAGEMENT ADVICE:

Based on the ICES approach for data limited stocks, ICES advises that landings should be no more than 2500 tonnes. This is the first year that ICES is providing quantitative advice for data limited stocks.

To protect the stock in this functional unit, management should be implemented at the functional unit level.

Other considerations

ICES approach to data limited stocks

For this stock, the last 10 years average landings correspond to a Harvest Rate below the range of MSY harvest rates calculated for other Nephrops FUs (between 7.5–17%) provided that the Nephrops density is at least 0.35. The most recent density estimate (from 2006) is 0.4 Nephrops per m2. Even though this density estimate is six years old, the stock development since then (as indicated by commercial effort and lpue trends) does not give reason for concern that the burrow density may have declined significantly. Therefore, ICES advises that landings should not increase in relation to the ten year average landings, which corresponds to landings of no more than 2500 tonnes.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the FU 20-21 stock and the advice basis for 2013 and 2014 that on the basis of the ICES approach to data limited stocks, catches should be no greater than 2500 t.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

3.2.5 Norway lobster (*Nephrops norvegicus*) in FU 22, Celtic Sea (the Smalls)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Landings from this Functional Unit are reported by France, the Republic of Ireland and the UK, the main contributors being Ireland (95%). These vessels mainly use twin otter trawls. The fishery occurs throughout the year with a seasonal peak in activity in May. In 2009 total reported landings amounted to more than 3000 t, but have decreased to 1617 t in 2011. The preliminary landings for 2012 are 2633 t. There has been a considerable decrease in French landings and effort (due to decommissioning) whilst Irish landings have increased. There has also been increasing effort by Irish vessels targeting *Nephrops* in the Celtic Sea in recent years. Discarding and high-grading takes place, but varies between fleets and areas. *Nephrops* fishery in the Celtic Sea has bycatches of whiting and cod, and to a lesser extent of haddock and hake.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based on indicators and an UWTV survey as last year. The advice for 2014 was delayed until autumn to take account of the most up-to-date survey information.

This year's advice is based on the MSY approach, as last year.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY} (FU 22) harvest rate.	10.9%	*Equivalent to $F_{35\%SPR}$ for combined sexes in 2011.*
Precautionary approach	Not defined.		

(unchanged since 2011)

Harvest ratio reference points (2011):

	Male	Female	Combined
F_{max}	10.9%	17.7%	12.3 %
$F_{0.1}$	6.5%	10.9%	7.5 %
$F_{35\%SPR}$	8.4%	15.3%	10.9%

STOCK STATUS:

F (Fishing Mortality)

	2010	2011	**2012**	
MSY (F_{MSY})	✗	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Unknown

SSB (Spawning-Stock Biomass)

	2011–2013	
MSY ($B_{trigger}$)	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	Undefined
Qualitative evaluation	→	Stable

The FU 22 stock component is considered to be stable. Harvest rates (removals/UWTV abundance) have decreased since 2007 and are below the F_{MSY} proxy.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings from FU 22 in 2014 should be no more than 2674 tonnes. If total discard rates do not change from the average of the last three years (2010–2012), this implies total catches of no more than 2937 tonnes. Note that this figure includes discards expected to survive the discarding process – assumed to be 25% of the total number discarded for this stock.

In order to ensure the stock in this FU is exploited sustainably, management should be implemented at the functional unit level.

Other considerations

MSY approach

No MSY $B_{trigger}$ has been identified for this FU. Following the ICES MSY approach implies that the harvest ratio for the Smalls FU 22 should be reduced to less than 10.9%, resulting in landings of no

more than 2674 tonnes in 2014. If discard rates do not change from the average of the last three years (2010–2012, assuming 25% discard survival), this implies total catches of no more than 2937 tonnes.

Additional considerations

The advice takes into account the 2013 UWTV survey results.

Cod, whiting, and to a lesser extent haddock are landed together with *Nephrops*. The *Nephrops* trawl fleet operating in Divisions VIIgfh discards around 38% of its total catch by weight. Small *Nephrops* are the main species in the discards and the main fish species discarded are whiting, haddock, and dogfish.

The proportion of discarded *Nephrops* is substantial. On average over the last three years, around 15% in numbers (or 9% in weight) of the *Nephrops* caught are estimated to have been discarded.

STECF COMMENTS**:** STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives landings should be no greater than 2674 tonnes and catches of no more than 2937 tonnes.

STECF notes that the landings corresponding to ICES advice for 2014 imply a 15% increase on the status quo harvest ratio (and 15% more in landings) from this functional unit.

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF notes that the *Nephrops* fisheries in this area are fairly mixed also landing Cod, whiting, and to a lesser extent haddock. The main discarded species are whiting, haddock, and dogfish.

3.3 Cod (*Gadus morhua*) in Division VIa (West of Scotland)

FISHERIES: Cod is taken in mixed demersal fisheries and, in Division VIa, is now regarded as a by-catch species. The fleets involved traditionally included French vessels targeting saithe and Scottish whitefish trawlers with smaller catches by vessels from Ireland and Norway.

In 2013 the >100 mm otter trawl gear vessels targeting finfish (TR1) took ~88% of the cod catch and the 70–99 mm *Nephrops* fleet (TR2) took ~4% of the catch. Part of the landings comes from vessels using TR1 gear, fishing west of the line defined in the cod long-term management plan. Discards reported to ICES (all fleets combined) are roughly four times greater than landings.

Landings were sustained at about 21,000 t until the late 1980s but have since declined markedly to a level of about 220 t in 2009. Landings restrictions in the first half of the 1990s led to considerable misreporting, however, legislation introduced in Britain and Ireland in 2006 has since reduced misreporting. Observer data show an increase in discards starting in 2006 and, whereas landings have remained at or below 500 tonnes since 2004, the total catch actually *increased* after 2004 as discarding rose from an historic level of 6% (1982 – 2000) to 65% or more in recent years.

Total catch in 2013 was 1501 t, where 20% are reported landings adjusted for misreporting and 80% are discards. Landings were 299 t (TR1 88%; TR2 4%; others 8%). Discards were 1202 t (TR1 72% and TR2 28%).

The management area for this stock also includes cod in VIb, Vb, XII and XIV with a specified share allocated to VIa.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. An analytical age-based assessment (TSA) was used to evaluate trends in spawning-stock biomass and recruitment.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{trigger}$	22 000 t	B_{pa}
	F_{MSY}	0.19	Provisional proxy by analogy with North Sea cod F_{max}. Fishing mortalities in the range 0.17–0.33 are consistent with F_{MSY}.
Precautionary Approach	B_{lim}	14 000 t	B_{lim} = B_{loss}, the lowest observed spawning stock estimated in previous assessments.
	B_{pa}	22 000 t	Considered to be the minimum SSB required to ensure a high probability of maintaining SSB above B_{lim}, taking into account the uncertainty of assessments. This also corresponds with the lowest range of SSB during the earlier, more productive historical period.
	F_{lim}	0.8	Fishing mortalities above this have historically led to stock decline.
	F_{pa}	0.6	This F is considered to have a high probability of avoiding F_{lim}.

(unchanged since: 2010)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✗	✗	✗	Harvest unsustainable

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity

Fishing mortality is high and has been above F_{lim} for most of the time-series. The spawning-stock biomass has been below B_{lim} since 1997 and has remained very low, well below B_{lim} since 2006. Recruitment has been estimated to be low since 2001 and is considered impaired.

MANAGEMENT OBJECTIVES:

The fishery is managed by a combination of TAC, area closures, technical measures, and effort restrictions.

The EU has adopted a long-term plan for cod stocks and the fisheries exploiting those stocks (Council Regulation (EC) 1342/2008 and 237/2010). This regulation repeals the recovery plans in Regulation (EC) No 423/2004, and has the objective of ensuring the sustainable exploitation of the cod stocks on the basis of maximum sustainable yield while maintaining a target fishing mortality of 0.4 on

specified age groups. The regulation is complemented by a system of fishing effort limitation (see EC 57/2010 for latest revision).

Cod in Division VIa is subject to the EU cod long-term management plan (EC 1342/2008). ICES has not evaluated whether the management plan is in accordance with the precautionary approach. However, management measures taken so far have not constrained catches and no increase in stock biomass has occurred.

RECENT MANAGEMENT ADVICE

No new data are available that change the perception of the stock from the advice given in 2013. Therefore, the same catch advice is still applicable for 2015: ICES advises on the basis of the MSY and precautionary approach that there should be no directed fisheries and that bycatch and discards should be minimized.

Other Considerations

MSY and precautionary approach:

Following the ICES MSY approach implies fishing mortality to be reduced to 0.02 (lower than the F_{MSY} proxy because SSB in 2015 is well below MSY $B_{trigger}$), which implies catches of no more than 38 tonnes in 2015. If discard rates do not change from the average of the last three years, this implies landings in 2015 of no more than 8 tonnes. This is expected to lead to an SSB of 3852 tonnes in 2016.

However, considering the low SSB and low recruitment over the last decade, it is not possible to identify any non-zero catch that would be compatible with the MSY and precautionary approach. Bycatches, including discards of cod in all fisheries in Division VIa, should be reduced to the lowest possible level and further technical measures to reduce catches should be implemented.

Management plan:

The fisheries on this stock are managed under the cod long-term management plan (EC 1342/2008). Until the 2012 assessment benchmark ICES did not consider it possible to assess unaccounted mortality accurately. As a consequence ICES has not yet evaluated whether the management plan is in accordance with the precautionary approach.

Instead of strictly following the F_{2014} assumption indicated in the MP, F_{2014} has in the forecast been assumed to be equal to the average F of 2011–2013; this seems more appropriate given the lack of reduction in F estimated by the assessment.

The size of the stock predicted at the 1st of January 2015 (2018 t) is well below B_{lim} (14 000 t). Following the agreed management plan implies $F_{2015} = 0.75 \times F_{2014}$. This results in a TAC for 2015 of 231 tonnes. If discard rates do not change from the average of the last three years, this corresponds to catches in 2015 of 1186 tonnes.

Additional Considerations

Management measures taken thus far have not recovered the stock and not constrained catches. TAC restrictions on landings and effort and spatial management of fisheries catching cod in Division VIa have not controlled mortality levels. In 2013 catches (landings + discards) were nine times greater than the reported landings and estimated mortality is increasingly due to discarding (Figure 5.3.3.3). It is necessary to reduce all sources of fishing mortality to recover the stock above B_{pa} as quickly as possible.

The zero TAC for this area and 1.5% bycatch by live weight limit implemented in 2012 applies to the retained part of the catches and therefore does not constrain discards. There is evidence to suggest that the introduction of this measure has resulted in substantially increased discard rates in some fleets. Measures to reduce the high discard rates are recommended.

Fleets fishing at depths less than 200 m (i.e. within the cod recovery zone) are subject to the effort restrictions of the cod long-term management plan (EC 1342/2008) and the new gear technical measures specified in EC 53/2010. Vessels fishing to the west of the management line are still subject to effort restrictions, but may apply for additional effort up to the point where fleet-aggregated effort equals that from the previous year (if fleet effort allowances were cut). Some landings from this stock are taken west of the line defined in EC 1342/2008.

Grey seal abundance is significant west of Scotland and they are known to feed on cod, among other species. The contribution of seal predation to total cod mortality is likely to be significant and this may impair the ability of the cod stock to recover.

STECF COMMENTS:

STECF agrees with the ICES advice that there should be no directed fisheries and that bycatch and discards should be minimized in 2015. STECF advises that this should be interpreted to mean that in 2015, catches of cod from Division VIa should be reduced to the lowest possible level.

STECF notes that Article 9 of Council Regulation ((EC) No. 1342/2008) establishing measures for the recovery and long-term management of cod stocks stipulates the following:

Where, due to lack of sufficiently accurate and representative information, STECF is not able to give advice allowing the Council to set the TACs in accordance with Articles 7 or 8, the Council shall decide as follows: (a) where STECF advises that the catches of cod should be reduced to the lowest possible level, the TACs shall be set according to a 25 % reduction compared to the TAC in the previous year; (b) in all other cases the TACs shall be set according to a 15 % reduction compared to the TAC in the previous year, unless STECF advises that this is not appropriate.

STECF therefore notes that in keeping with the above advice from ICES and STECF, the provisions of Article 9(a) of Council Regulation ((EC) No. 1342/2008) apply, and prescribe that the TAC for cod in waters to the West of Scotland in 2015 shall be set according to a 25% reduction compared to the TAC in 2014.

The agreed TAC for 2014 is 0 t implying that the TAC for 2015 should also be set at 0 t.

STECF notes that whereas the fishery is managed by a combination of TAC, area closures, technical measures, and effort restrictions, current management measures are not controlling mortality levels on cod in Division VIa.

3.4 Cod (*Gadus morhua*) in Division VIb (Rockall)

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: Rockall cod has been exploited predominantly by Scottish, Irish and Norwegian vessels using towed gears. Landings have fluctuated between 500 t and 2,000 t (1984-2000) but thereafter showed a steady decline to a level of about 60 t in 2005 - 2006. Over the period 2007 - 2012 landings fluctuated between 30t and 100 t. Total landings for 2013 were 13.6 t.

The management area for this stock also includes cod in Vb, XII and XIV.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES but no explicit management advice is given for this stock.

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

F (Fishing Mortality)

	2009–2011
Qualitative evaluation	? Insufficient information

SSB (Spawning-Stock Biomass)	
	2009–2011
Qualitative evaluation	? Insufficient information

MANAGEMENT OBJECTIVES:

The fishery is managed by a combination of TAC, area closures, technical measures, and effort restrictions.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013 and 2014: " *Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 70 tonnes*". There are no new data available that change the perception of the stock. Therefore, the same catch advice is still applicable for 2015.

Other Considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years' average landings, corresponding to catches of no more than 70 t.

STECF COMMENTS: STECF notes that the state of the stock is unknown. However, because the precautionary buffer (20% reduction in catch) was applied in the advice issued in 2012, and catches are marginal, the same catch advice (70 t) is considered valid.

STECF advises that because cod are taken in a mixed fishery with haddock, management measures adopted for VIb cod should also be consistent with the management measures adopted for VIb haddock.

3.5 Haddock (Melanogrammus aeglefinus) in Division VIa (West of Scotland)

The assessment has been combined with that in IIa (EU zone), in Sub-area IV (North Sea) and Division IIIa (Skagerrak- Kattegat) – see Section 2.6.

3.6 Haddock (*Melanogrammus aeglefinus*) in Division VIb (Rockall)

FISHERIES: The haddock stock at Rockall is an entirely separate stock from that on the continental shelf of the British Isles. Rockall haddock have lower growth rates and reach a lower maximum size than other haddock populations in the Atlantic.

Until recently the Rockall haddock fishery largely occurred in summer months, when conditions are easier and particularly when fishing at Rockall was more profitable compared with the North Sea or West of Scotland. A number of Irish vessels did however exploit this stock on a more regular basis.

Haddock are caught in a mixed fishery together with blue whiting and a number of non-assessed species such as grey gurnard. Traditionally Scottish and Irish trawlers target haddock, whilst Russian trawlers also fish for species such as gurnard. UK, Russian and Irish vessels account for the highest proportion of the landings, with smaller quantities taken by other nations including Iceland, France, Spain and Norway.

As part of this stock area now falls outside the EU EEZ there was an increase in activity by non-EU fleets, notably Russian Federation vessels, from 1999 onwards, although this has declined in recent years. Landings by non-EU fleets reached a peak in 2004, when reported landings by the Russian Federation amounted to 5,844 t or some 90% of the total. For 2010, the officially reported landings from the Russian Federation and Norway were 198 t and 65 t respectively compared with 55 t and 71 t in 2009. Total catches for 2013 were 1967 t, of which 826 t were landings (85% trawl and 15% longline) and 1143 t discards (58% by weight and 87% by numbers).

Effort by the Scottish and Irish fleets increased in recent years following a period of reduced effort 2004 – 2006, and anecdotal information suggests this is partly as consequence of effort restrictions introduced as part of the 2009 long-term plan for cod.

Following the NEAFC agreement in March 2001, an area of the NEAFC zone around Rockall was closed to fishing. In spring 2002, part of the shallow water in the EU component was also closed to trawling. The main goal of the ban was to protect young haddock distributed in shallow water. At the request of NEAFC, ICES has this year provided advice on the Rockall closure area and additional measures for the protection of juveniles. ICES concluded that the overall impact of the current closure area is difficult to assess, and advised that a number of technical and operational measures could be examined to improve the selection pattern of the entire fishery.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. An analytical age-based assessment (XSA) was used. The assessment is based on catch numbers-at-age and one survey index (Rock-WIBTS-Q3). In 2011 the survey was resumed with a new gear but an analysis showed that there was no detectable difference between it and the older gear.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	9000 t	B_{pa}
Approach	F_{MSY}	0.2	Based on stochastic simulations.
Precautionary Approach	B_{lim}	6000 t	B_{lim} = $B_{loss,}$ the lowest observed spawning stock estimated in previous assessments.
	B_{pa}	9000 t	B_{pa} = B_{lim} * 1.5. This is considered to be the minimum SSB required to obtain a high probability of maintaining SSB above B_{lim}, taking into account the uncertainty of

			assessments.
	F_{lim}	Not defined.	Not defined due to uninformative stock recruitment data.
	F_{pa}	0.4	This F is adopted by analogy with other haddock stocks as the F that provides a small probability that SSB will fall below B_{pa} in the long term.

(Last changed in: 2014).

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvest sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	o	✗	✗	Reduced reproductive capacity

The spawning-stock biomass increased up to 2008 as a result of the 2001 and 2005 year classes but has decreased constantly since then. SSB in 2013 and 2014 is below B_{lim}. Fishing mortality has declined over time but remains above the F_{MSY} proxy. Recruitment during 2007–2012 is estimated to be extremely weak. The 2013 survey data indicate that the 2012 year class (corresponding to the 2013 recruitment) is above the mean estimates of recruitment. The 2013 year class is below the average of the historical recruitment time-series.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 4310 t in 2015. If discard rates (at age) do not change from the average of the last eight years (2006–2013), this implies landings of no more than 2930 t.

Further management measures should be introduced to reduce the discards, catches of small haddock, and to protect the incoming recruitment in 2013.

Other Considerations

MSY approach

Following the ICES MSY approach implies a fishing mortality at F_{MSY} = 0.20, resulting in catches of no more than 4310 t in 2015. If discard rates (at age) do not change from the average of the period 2006–2013, this implies landings of no more than 2930 t. This is expected to lead to an SSB of 19 200 t in 2016.

Further management measures should be introduced to reduce the discards, catches of small haddock, and to protect the incoming recruitment in 2013.

Precautionary approach

Fishing mortality in 2015 should be no more than F_{pa} = 0.4, which implies catches in 2015 of no more than 7730 t. If discard rates (at age) do not change from the average of the period 2006–2013, this implies landings of no more than 5240 t. This is expected to bring SSB in 2016 above B_{pa}

Further management measures should be introduced to reduce the discards, catches of small haddock, and to protect the incoming recruitment in 2013.

Management plans

ICES evaluated a new HCR proposal for the Rockall haddock stock in 2013 and found that under the low recruitment conditions, a maximum F of 0.2 was required in the HCR to ensure consistency with the precautionary approach. If F = 0.2 in 2015, then SSB is forecast to be above B_{pa} at the end of 2015. Under these circumstances, the proposed HCR initially calculates catches according to a fishing mortality of 0.2 in 2015, followed by the application of a TAC constraint adjustment. This results in F = 0.18 in 2015, corresponding to catches of no more than 3800 t in 2015. If discard rates (at age) do not change from the average of the period 2006–2013, this implies landings of no more than 2580 t.

Additional considerations

Discards significantly increased in 2013 and are expected to remain high in 2014 as a consequence of the strong 2012 year class.

Further technical measures to reduce bycatch discarding of the recruiting year classes should be considered. These might include increasing the mesh size in the square mesh panels and/or increasing the mesh size in gadoid fisheries catching haddock, as well as considerations on minimum landing size.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that on the basis of the MSY approach, catches should be no more than 4310 t in 2015. If discard rates (at age) do not change from the average of the last eight years (2006–2013), this implies landings of no more than 2930 t.

STECF also notes that the proposed HCR management plan evaluated by ICES in 2013 prescribes that catches in 2015 should be no greater than 3800 t. If discard rates (at age) do not change from the average of the period 2006–2013, this implies landings of no more than 2580 t. However, given that the relative strength of the average of the 2012 and 2013 yearclasses is 2 times greater than the average of the 2005 to 2012 yearclasses, the implied landings value of 2580 t is likely to be an overestimate.

3.7 Saithe (*Pollachius virens*) in Div´s Vb (EU zone), VI, XII and XIV

The assessment has been combined with that in Sub-Area IV – see Section 2.7.

3.8 Whiting (*Merlangius merlangus*) in Division VIa (West of Scotland)

FISHERIES: Whiting occur throughout northeast Atlantic waters in a wide range of depths, from shallow inshore waters down to 200 m. Adult whiting are widespread throughout Division VIa, while high numbers of juvenile fish occur in inshore areas. There may be a degree of mixing of adult fish between IVa and the VIa component off the northwest of Scotland.

Whiting has never been a particularly valuable species and is primarily taken as a bycatch with other species, such as *Nephrops*, haddock, cod and anglerfish. Scottish trawlers take most of the whiting catch in Division VIa, Ireland takes a smaller proportion of the catch and all the remaining catch is taken by EU vessels. Whiting in Division VIa are caught mainly by 80–120 mm trawls. There has been a reduction in trawl and seine effort, with a more moderate reduction by *Nephrops* trawlers.

At present a higher proportion of the overall effort is by relatively small-meshed trawls. There has been a tendency to shift from the use of heavy groundgear (like rockhopper) to lighter groundgear.

Since 1987, human consumption landings declined from about 11,500 t to an historic low of 290 t reported officially in 2005. Total catch in 2012 was 1039 t, of which 30% were landings (313 t) and 70% discards; approximately 80% of these discards come from the TR2 (*Nephrops*) fishery. Total catches for 2013 were 1175 t, where 222 t were estimated landings (TR1 78%, TR2 20%, and others 2%) and 953 t were discards.

The increase in minimum mesh size from 100 to 120 mm in 2001/2002 (before the introduction of effort regulation 27/2005) partly caused a shift to 80-mm mesh sizes in the mixed fishery trawls, due to the loss of valuable *Nephrops* catches. Poorer selectivity at this mesh size may have led to increased discarding and high grading.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. An age-based analytic assessment (TSA) was used with three surveys.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	Not defined.	
Precautionary Approach	B_{lim}	16 000 t	Blim = Bloss (1998), the lowest observed spawning stock estimated in previous assessments.
	B_{pa}	22 000 t	Bpa = Blim * 1.4. This is considered to be the minimum SSB required to have a high probability of maintaining SSB above Blim, taking into account the uncertainty of assessments.
	F_{lim}	1.0	Flim is the fishing mortality above which stock decline has been observed.
	F_{pa}	0.6	

(unchanged since: 1998)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	?	?	?	Unknown
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Unknown

Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity

The spawning-stock biomass has been increasing since 2006 but remains very low compared to the historical estimates and is below B_{lim}. Fishing mortality has declined continuously since around 2000 and is now very low. Recruitment is estimated to have been very low since 2002. The 2009 and, to a lesser degree, 2011 year classes are estimated to be above the recent average.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the precautionary approach that there should be no directed fishery and bycatch should be minimized**.**

Other Considerations

PA considerations

Given the low SSB and low recruitments in recent years, it is not possible to identify any non-zero catch which would be compatible with the precautionary approach. Catches should be reduced to the lowest possible level.

Management considerations

Despite widespread usage of large square mesh panels (200 mm) in the Scottish TR2 fishery since late 2012 the proportion of discarded fish remains very high. More than half of the annual catch weight consists of undersized whiting which are discarded. Nearly 90% of these discards come from the *Nephrops* (TR2) fishery. Introduction of square mesh panels in 2012 is expected to reduce discarding of whiting in the *Nephrops* (TR2) fleet. This has not been evaluated by ICES.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

3.9 Whiting (*Merlangius merlangus*) in Division VIb (Rockall)

The results from the most recent assessment and advice for this stock were released in 2012. The text below remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: There are doubts on the accuracy of the reported landings as these are reported by vessels operating in both Divisions VIa and VIb. Available data provides information on landings only. Landings of whiting from Division VIb are negligible, 3 t (preliminary) in 2013.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. No assessment has been carried out.

REFERENCE POINTS: No precautionary reference points or reference points related to fishing at MSY have been proposed.

STOCK STATUS: The state of the stock is unknown.

F (Fishing Mortality)	
	2009–2011
Qualitative evaluation	? Insufficient information

SSB (Spawning Stock Biomass)

	2009–2011	
Qualitative evaluation	?	Insufficient information

RECENT MANAGEMENT ADVICE: The 2012 advice for this stock is biennial and valid for 2013 and 2014: "Based on the ICES approach for data limited stocks, ICES advises that catches should be no more than 11 tonnes". There are no new data available that change the perception of the stock. Therefore, the same catch advice is still applicable for 2015.

ICES approach to data limited stocks

For data limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

Because the precautionary buffer (20% reduction in catch) was applied in the advice issued in 2012, and catches are marginal, the same catch advice (11 t) is also considered valid for 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the TAC is for the combined Divisions VIa and VIb; therefore, the TAC is unlikely to be effective in limiting catches in Division VIb (Rockall).

3.10 Anglerfish (*Lophius piscatorius &* Lophius *budegassa*) in ICES Divisions IIIa & Vb , Subareas IV, VI, XII & XIV.

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Anglerfish mature at large size, resulting in a high fraction of the catch consisting of immature fish. Catches of anglerfish on the northern shelf (from Division VIb to IIIa) come from the same biological stock. Spawning appears to occur largely in deep water off the edge of the continental shelf, although mature females are rarely encountered. Anglerfish are caught widely in VIa with the highest catch rates occurring along the shelf edge in deeper waters.

Anglerfish are caught in a targeted anglerfish fishery in Sub-Area VI and as a bycatch in other demersal fisheries, including round fish fisheries in Division VIa, the haddock fishery on Rockall Bank, *Nephrops* fisheries, and fisheries in deeper waters. In the North Sea, anglerfish are caught mainly as a bycatch in demersal fisheries for mixed round fish and *Nephrops* and to a lesser extent in small meshed *Pandalus* fisheries.

The directed fishery takes place in deep water on the continental shelves in areas where cold-water corals (*Lophelia spp.*) occur, particularly at Rockall. However, demersal trawling is prohibited in several large areas at Rockall, and near the Wyville–Thomson ridge, which affords protection for corals in those areas.

Vessels from EU Member States take most of the catch. ICES estimates of landings show an increase from around 8,000 t in the mid 70's to a peak in 1995 around 35,000 t. Total landings in 2012 were 11, 493 t (7,351 t in Division IIIa and Subarea IV; 4,142 t in Subarea VI). Discards from the Scottish, Irish, and Danish fleets were minimal in 2012 (64 t).

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The assessment area (Divisions IIa and IIIa & Subareas IV and VI) includes anglerfish from Sub-area IV.

The information basis for anglerfish is being developed, with improvements to both industry related data and surveys. There is currently insufficient data to support an analytic assessment of the state of the stock.

Landings information provided in the ICES advice does not include Divisions XII and XIV but these represent only a small fraction of the stock.

REFERENCE POINTS:

No reference points have been defined for these two stocks. Because of identified problems with growth estimates and uncertainties in ageing, previous reference points are not considered to be valid.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2008–2012	
Qualitative evaluation	↘	Decreasing

Recent dedicated anglerfish surveys, the Scottish and Irish anglerfish and megrim industry/science surveys for the Northern shelf (SCO-IV-VI-AMISS-Q2) in Division IVa and Subarea VI, indicate a decline in biomass since 2008. The average biomass over this area in the last two years (2011–2012) is 22% lower than the average biomass of the three previous years (2008–2010).

MANAGEMENT OBJECTIVES: There are no explicit management objectives for this stock but the European Community and Norway are in discussions regarding the joint management of this shared stock.

RECENT MANAGEMENT ADVICE:

No analytical assessment can be presented for this stock. Because of uncertainties concerning catch-at-age data as well as limited knowledge about population dynamics, a forecast cannot be presented.

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 10 231 t in 2014. All catches are assumed to be landed.

ICES advise that the management area should be consistent with the assessment area.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which biomass estimates are available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent biomass values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated to have decreased by more than 20% between the periods 2008–2010 (average of the three years) and 2011–2012 (average of the two years). This implies a decrease in catches of at least 20% in relation to the average catches of the last three years, corresponding to catches in 2014 of no more than 10 231 t. All catches are assumed to be landed.

Though the exploitation status is unknown, the effort in the main fisheries has decreased until 2011 and an increase in 2012 is not anticipated; therefore, no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that catches should be no more than 10,231 t in 2014. Given that the stock is distributed over 2 separate TAC management areas (VI; EU and international waters of Vb; international waters of XII and XIV and EU waters of IIa and IV), STECF notes that advised catch of 10,231 t should equate to the fishing opportunities for both TAC management areas combined. However, the issue of how such fishing opportunities would best be allocated remains to be resolved.

STECF considers that from a scientific perspective, it would be appropriate to allocate fishing opportunities according to the relative distribution of anglerfish biomass in the separate management areas. The trawl survey data presented in the ICES advice indicate an average total survey biomass estimate of anglerfish for the period 2010-2012 of 36,325 t, of which 17,333 t (46%) was distributed in subarea IV and 19,952t (54%) was distributed in Sub-area VI. Using the relative survey biomass estimates as a means of allocating the advised fishing opportunities, implies that in 2014 catches no greater than 5,475 t in EU waters of IIa and IV and no greater than 4,756 t in VI; EU and international waters of Vb; international waters of XII and XIV.

STECF notes that if fishing opportunities for anglerfish in 2014 were to be allocated according to the procedure outlined above, compared to the agreed TACs for 2013, they would represent a 45% decrease in fishing opportunities in EU waters of IIa and IV and an 11% increase in EU and international waters of Vb; international waters of XII and XIV.

STECF notes that landings from subarea XII and division Vb are not included in the ICES assessment.

3.11 Megrim (*Lepidorhombus whiffiagonis* and *Lepidorhombus boscii*) in ICES Subarea VI (West of Scotland and Rockall).

The stock summary and advice for megrim in Subarea VI is given together with Divisions IVa, Vb, XII and XIV in Section 3.12.

3.12 Megrim (*Lepidorhombus whiffiagonis*) in IVa, Vb (EU zone), VI, XII & XIV

FISHERIES: The main fishery is in Sub-Area VI where megrim is taken as a by-catch in trawl fisheries targeting anglerfish, roundfish species and *Nephrops*. There is however increasing targeting of megrim in response to more restrictive fishing opportunities for other species. Since 2009, ICES also provides advice on megrim in Subarea IV (North Sea). This is because the spatial distribution of landings data and survey catches provide good evidence to suggest that megrim population is contiguous between Divisions IVa and VIa.

The main exploiters are the UK (≥ 80% of catch in the past 4 years), Ireland, France and Spain.

From 2006 to 2013 landings of Megrim in Division VIa, VIb and subarea IV declined from 5250 t in 2006 to 2400 t in 2013. Estimated corresponding discards ranged from around 1600 t in 1996 to 400 t in 2013. It is unclear if the trends in landings reflects trends in abundance or are a consequence of the changes in trawl effort observed over the period.

Area misreporting had been prevalent as megrim catches were misreported from Subarea VI into Subarea IV due to restrictive quotas for anglerfish (i.e. vessels targeting anglerfish misreported all landings including megrim from Subarea VI into Subarea IV). However, in the most recent years there is evidence to suggest that this has reversed as the subarea IV TAC has become more restrictive and increasing targeting of megrim in response to more restrictive fishing opportunities for other species e.g. cod. The extent of this problem is unknown and should be quantified through integrated logbook and VMS analysis. As a consequence, the management of anglers and megrim which in the past has been thought to be strongly coupled is now likely to significantly less so.

SOURCE OF MANAGEMENT ADVICE:

The management advisory body is ICES.

ICES consider that there is little evidence to suggest that the megrim in Subarea IV and Division VIa are separate stocks and concluded that megrim in Divisions VIa and IVa should be treated as a single stock and megrim in Division VIb (Rockall) should be treated as a separate stock. Consequently it provides advice, separately, for each. In both cases these assessments are landings and survey trends based rather than analytical.

REFERENCE POINTS:

Divisions IVa and VIa:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	9740 t	50% B_{MSY}
	F_{MSY}	0.33	Estimated directly from the model. Fishing mortality values expressed relative to F_{MSY}.
Precautionary Approach	B_{lim}	5844 t	30% B_{MSY}
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

Divisions IVa and VIa:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Biomass				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

A Bayesian state–space biomass dynamic model was used in 2013 for Megrim in IVa+VIa. Fishing mortality has been below F_{MSY} for almost the full time-series and the biomass well above MSY $B_{trigger}$.

Division VIb (Rockall)

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation		Below poss. reference points

SSB (Spawning-Stock Biomass)		
	2008–2012	
Qualitative evaluation		Increasing

There is no analytical assessment for the Rockall stock. Survey indices for Division VIb show an increase in biomass over the time-series from 2005 to 2010, followed by a decline in 2011. The 2012 survey data shows a substantive increase in biomass. The average of the stock size indicator, biomass from the survey, in the last two years (2011–2012) is 52% higher than the average of the three previous years (2008–2010). The harvest ratio has been on a low and stable level since 2007.

RECENT MANAGEMENT ADVICE:

Divisions IVa and VIa: The 2013 advice for this stock is biennial and valid for 2014 and 2015. New data (catch and surveys) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: ICES advises on the basis of the MSY approach that catches should be no more than 7000 t in 2014 and 2015. If discard rates do not change from the average of the last three years, this implies landings of no more than 5950 t.

Division VIb (Rockall): Based on ICES approach to data-limited stocks, ICES advised in 2013 that landings should be no more than 207 t in 2014 and 2015. Discards are known to take place but cannot be quantified; therefore total catches cannot be calculated. ICES advises that the management area should be the same as the assessment area.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice that catches in should be no more than 7,000 t in 2015 . Given that the stock is distributed over 2 separate TAC management areas ((i) *EU waters of IIa and IV* and (ii) *EU and international waters of Vb; VI; international waters of XII and XIV*), STECF notes that advised catch should equate to the fishing opportunities for both TAC management areas combined. STECF notes that ICES (2013) the management and assessment units should be appropriately aligned and they should encompass the full spatial structure of the stock. ICES recommends that the management unit should match the assessment unit. Currently, there is a process to resolve how such fishing opportunities would best be allocated, but this process has not been finalised.

STECF considers that from a scientific perspective, if there is desire to maintain the current TAC area arrangements, it would be appropriate to allocate fishing opportunities according to the relative distribution of megrim biomass in the separate management areas. According to the SAMISS/IAMISS survey data, the average biomass distribution of megrim for the period 2010-2012 indicates that 56% is distributed in subarea IV and 44% is distributed in Division VIa. Using these relative survey biomass estimates as a means of allocating the advised fishing opportunities, implies that in 2015 landings no greater than 3,332 t in *EU waters of IIa and IV* and no greater than 2825 t in *EU and international waters of Vb; VI; international waters of XII and XIV*.

STECF notes that if fishing opportunities for megrim in 2015 were to be allocated according to the procedure outlined above, compared to the agreed TACs for 2013, they would represent a 72% increase in fishing opportunities in *EU waters of IIa and IV* and an 17% decrease in *EU and international waters of Vb; VI; international waters of XII and XIV*.

Request to ICES on the distribution of the stock of megrim in Subarea IV and VIa.

STECF notes the ICES response to the Commission's request on the distribution of the stock of megrim in Subarea IV and VIa (ICES Advice 2013, Book 5, Section 5.3.3.1).

STECF agrees with logical explanations given in the ICES response and with the ICES advice that the management units should match the biological/assessment units.

3.13 Plaice (*Pleuronectes platessa*) - Vb (EU zone), VI, XII, XIV

STECF did not have access to any stock assessment information on plaice in these areas.

3.14 Sole (*Solea solea*) – VIIhjk

FISHERIES: Sole are predominantly caught within mixed species otter trawl fisheries in Division VIIj. These vessels target mainly hake, anglerfish, and megrim. Beam trawlers and seiners generally take a lesser catch of sole. The major participants in this fishery are Ireland, the UK and France with a smaller contribution from Belgium. Catches in Division VIIk are negligible while sole in Division VIIj are mainly caught by Irish vessels on sandy grounds off the southwest of Ireland.

The stock area includes Division VIIh. However, the landings in Divisions VIIj,k are taken in the northeastern part of Division VIIj, which is about 250 km away from the northern part of Division VIIh where most of the landings from Division VIIh are taken. It is likely that sole in Division VIIh is part of the Division VIIe or Division VIIf stocks. This needs to be further evaluated. In the lack of firm conclusions, ICES prefers to keep the current stock area.

Between 1973 and 1998 landings fluctuated between 650 t and 1,100 t (with the exception of 1978/79 when they fell to 450-550t). Since 1999 landings have generally been less than 500 t and since 2006 less than 300 t.

Total catch in 2013 was 211 t, where 100% are landings estimates (68% otter trawls, 24% beam trawls, and 8% other gear types). Discards are considered negligible.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Age-based analytical assessment (XSA) indicative of stock trends. Commercial catches (international landings from Divisions VIIjk, Irish age composition from catch sampling); commercial tuning index (IRL-VMS-OTB); natural mortalities and maturity are assumed to be the same as for sole in Divisions VIIfg. Discards not included into assessment and regarded as minor.

REFERENCE POINTS: No reference points are defined for this stock. Previous defined reference points were provisional.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation		Below poss. reference points

Stock size		
	2010–2014	
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Stable

SSB shows a gradual increasing trend since the mid-2000s. The average of the stock size indicator (SSB from the exploratory assessment) in the last two years (2013–2014) is the same as the average of the three previous years (2010–2012). Fishing mortality has remained stable in recent years at a lower level than was observed in the 1990s. Recruitment is estimated to have been low in the last three years.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the data-limited approach that catches should be no more than 225 t in 2015. All catches are assumed to be landed.

Other consideration

ICES approach to data-limited stocks

For data-limited stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted status quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated not to have changed between the periods 2010–2012 and 2013–2014. This implies no change in catches in relation to the average of the last three years, corresponding to catches in 2015 of no more than 225 tonnes. All catches are assumed to be landed. Considering that exploitation is not detrimental to the stock, no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the advice for 2015 that catches should not exceed 225 t implies a 41% decrease compared to the agreed TAC for 2014 (382 t).

3.15 Sole (*Solea solea*) - VIIbc

FISHERIES: Sole in VIIb are mainly caught by Irish vessels on sandy grounds in coastal areas. Sole catches in VIIc are negligible. In VIIb there are two distinct areas where sole are caught: an area around Galway Bay and an area in the north of VIIb which extends into VIa (the Stags and Broadhaven Ground). The landings and lpue of sole in VIIbc appear to have been more or less stable since the start of the logbooks time-series in 1995. It is not known how much exchange there is between sole on the Aran Grounds and those on the Stags Ground.

Ireland is the major participant in this fishery. Sole are normally caught in mixed species otter trawl fisheries in Division VIIb. These vessels mainly target other demersal fish species and *Nephrops*. Recent landings have varied between 77 t in 2000 and 44 t in 2012. Landings in 2013 were 33 t and below the agreed TAC of 42 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a precautionary reduction of catches because of missing or non-representative data. Official landings and Irish commercial otter trawl effort and lpue time series since 1995.

REFERENCE POINTS: No reference points have been proposed for this stock.

STOCK STATUS:

F (Fishing Mortality)	
	2009–2011
Qualitative evaluation	? Insufficient information

SSB (Spawning-Stock Biomass)	
	2009–2011
Qualitative evaluation	? Insufficient information

Catches in this area are too low to support the collection of the necessary information for an assessment of the stock status.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013 and 2014: "Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 30 tonnes". The new data available do not change the perception of the stock. Therefore, the same catch advice is also applicable for 2015.

ICES approach to data-limited stocks

There is insufficient information to evaluate the status of the stock. For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

Because a precautionary buffer (20% reduction in catch) was applied in the advice issued in 2012, and catches are marginal, the same catch advice (30 t) is also considered valid for 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 .

STECF notes that following the ICES approach to data-limited stocks, the advised catches for this stock for 2015 would have been greater than 30 t, if all Member States had fully-utilised their quota entitlements over the years 2009-2011.

3.16 Sole (*Solea solea*) – Vb, VI, XII and XIV

STECF did not have access to any stock assessment information on plaice in these areas.

3.17 Sandeel (*Ammodytes spp. & Gymammodytes spp.*) in Division VIa

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: Landings of sandeel from Division VIa are negligible, 0 t (2008 – 2013).

A directed industrial fishery existed in the past but this fishery has ceased to exist. If industrial fisheries resumes in this area they may take a bycatch of juvenile herring and other species.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. No assessment has been carried out.

REFERENCE POINTS: No precautionary reference points or reference points related to fishing at MSY have been proposed.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
Qualitative evaluation	? Insufficient information

SSB (Spawning Stock Biomass)	
	2010–2013
Qualitative evaluation	? Insufficient information

The available information is inadequate to evaluate stock status or trends. The state of the stock is therefore unknown.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock is biennial and valid for 2013 and 2014: "*Based on the ICES approach to data limited stocks, and taking into account the absence of landings in recent years, ICES advises that no increase of the catches should take place unless there is evidence that this will be sustainable"*. There are no new data available that change the perception of the stock. Therefore, the same advice is also applicable for 2015 and 2016.

STECF COMMENTS:

STECF agrees with the ICES advice for 2015 and 2016.

3.18 Norway pout (*Trisopterus esmarki*) in Division VIa (West of Scotland)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES A directed industrial fishery existed in the past but at present there are no directed fisheries for Norway Pout in Division VIa. Total landings for the years 1971 – 2009 varied considerably, from a high in 1987 of some 38,000 tonnes to less than 50 tonnes every year since 2005 and zero tonnes since 2007. Historically the majority of landings have been taken by Danish fleets with lesser catches by UK, Netherlands and Germany. If industrial fisheries resumes in this area they may take a bycatch of juvenile herring and other species.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No fishing mortality or biomass reference points are defined for this stock.

STOCK STATUS: The available information is inadequate to evaluate stock trends relative to risk, so the state of the stock is unknown. The only data available are official landings statistics which have been very low and do not provide an adequate basis for scientific advice.

RECENT MANAGEMENT ADVICE: There is insufficient information to evaluate the status of this stock. Therefore, based on the ICES approach to data limited stocks, and taking into account the absence of landings in recent years, ICES advises for 2013 and 2014 that no increase of the catches should take place unless there is evidence that this will be sustainable.

STECF COMMENTS: STECF agrees with the ICES advice that as there is insufficient information to evaluate the status of stock, based on precautionary considerations, no increase of the catches should take place unless there is evidence that this will be sustainable.

3.19 Rays and skates in ICES Subareas VI and VII

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Rays and skates are taken as target and by-catches in most demersal fisheries in the ICES area. There are some directed fisheries, for example, in VIIa, but most ray and skate landings are by-catches in trawl and in seine fisheries. A generic TAC introduced for all skate and rays species In North Sea in 1999 but not yet for Celtic Seas. Prior there has been no obligation for fishermen to record catches in the logbooks used for monitoring quota uptake of TAC species. As a consequence, there is a lack of information on the fisheries for rays. Statistical information by species is also limited because few European countries differentiate between species in landings statistics and they are collectively recorded as skates and rays. The main exception is France, for which the cuckoo ray and the thornback ray are the most important species of skates and rays landed.

Fisheries on skates are currently managed under a common TAC, although this complex comprises species that may have different vulnerabilities to exploitation. TAC advice is based on the status of the main commercial species, with species-specific advice for other species also provided where relevant.

Demersal elasmobranchs in this region are caught in mixed target and non-target fisheries. TACs alone may not adequately protect these species as restrictive TACs may lead to high discarding.

At present fisheries on rays and skates are managed by means of a generic, multi-species TAC, along with prohibitions for severely depleted species.

Management measures such as closed areas/seasons or effort restrictions may better protect demersal elasmobranchs. In particular, measures to protect spawning/nursery grounds would be beneficial. ICES could provide advice on such measures.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***

MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

F_{MSY} is not currently definable for these stocks, unless further information is available, including a better assessment of the species composition of the landings. Reference points cannot be defined.

STOCK STATUS: Of the six main commercial skate species, two species (*Raja clavata* and *R. montagui*) show increasing trends in relative abundance. There is evidence of declining abundance of *Leucoraja naevus*, and a slight decreasing trend in recent years for *R. microocellata.* The stock status of two species (*L. fullonica* and *R. brachyura*) are unclear. There is not enough information to assess the status of any species in the Rockall area.

F_{MSY} is not currently defined for these species and may be of limited use until further information is available, including a better assessment of the species composition of the landings. Biomass reference points have not been set at the present time, but could be developed for survey indices.

Landings of skates and rays in the Celtic Sea ecoregion have generally declined, and this is associated with changes in species composition and relative abundance. Species-specific landings are available from 2011.

The following provides a qualitative summary of the general status of the major species based on surveys and landings:

Species	**Area**	**State of stock**
Common skate complex	VI	Depleted. The stock likely extends into IIa and IVa
	VII	Depleted. Near extirpated from the Irish Sea (VIIa)
R.. clavata (thornback ray)	VI	Stable/increasing.
	VIIa,f,g	Stable/increasing.
	VIIe	Uncertain
R.. montagui (spotted ray).	VI	Stable/increasing.
	VIIa,f,g	Stable/increasing.
	VIIe	Uncertain
L. naevus (cuckoo ray)	VI	Uncertain. The stock area is not known, and may merge with sub-areas IV and VII. Survey catches in VIa are increasing.
	VII	Uncertain. The stock area is not known, and may merge with sub-areas VI and VIII. French LPUE in the Celtic Sea has declined. Survey catches appear stable

R. brachyura (blonde ray)	VIa	Uncertain. No trends are apparent from surveys.
	VIIa	Uncertain. No trends are apparent from surveys.
	VIIe	Uncertain
	VIIf	Uncertain. No trends are apparent from surveys.
R.. undulata (undulate ray)	VIIj	Uncertain. Locally common in discrete areas.
	VIId,e	Uncertain. Locally common in discrete areas.
R. microocellata (small-eyed ray)	VIIf	Stable/increasing.
L. circularis (sandy ray)	VI	Uncertain.
	VIIbc,h-k	Uncertain – stable/increasing in VIIj
R. fullonica (shagreen ray)	VI	Uncertain. There is a poor signal from surveys for this species.
	VIIbc,g-k	Uncertain. There is a poor signal from surveys for this species.
Dipturus oxyrinchus (long-nose skate)	VI-VII	Uncertain
Dipturus nidarosiensis (Norwegian skate)	VI	Uncertain

Stock trends from fishery-independent trawl surveys are available in most cases, however, for most stocks, it is not possible to identify whether overfishing takes place.

Landings of skates and rays in the Celtic Seas have generally declined, and this is associated with changes in species composition and relative abundance.

There is not enough information to assess the status of any species in the Rockall area. The assessments below refer to the other divisions within this eco-region.

RECENT MANAGEMENT ADVICE: ICES provides advice on the overall exploitation (landings and discards) of the ray and skates species assemblage, and also individual species (see table below). ICES does not advise that species-specific TACs be established, at present. This is because a TAC is not considered the most effective means to regulate fishing mortality in these, mostly bycatch, species.

ICES advises that a suite of species- and fishery-specific measures be developed to manage the fisheries on the commercial species and achieve recovery of the depleted species. Such measures should be developed by management authorities involving all stakeholders; ICES could assist in this process.

Management measures should be framed in a mixed-fisheries context, considering the overall behaviour of demersal fleets, and the drivers for such behaviour. These species are mainly caught in mixed fisheries. When the TAC is exhausted, catches continue to take place, but are discarded. In order to achieve optimal harvesting of the commercial species, and to assist recovery of the depleted species, a suite of measures should be put in place.

Closure to fishing of spawning and/or nursery grounds, and measures to protect the spawning component of the population (e.g. maximum landing size) are powerful tools to protect rays and skates. In some cases, single-species TACs may be appropriate, but their effects should be carefully evaluated for each specific case before implementation.

Given that the European Community intends to introduce a ban on discards, minimum or maximum landing sizes should be carefully considered before they are introduced, because they could lead to increased discards.

ICES advises that white skate (*Rostroraja alba*) remains on the Prohibited Species List, as it appears to be depleted in the Celtic Sea ecoregion

Advice for 2013 and 2014 by individual stocks

Species	Area	Stock Status	Advice[3]
Common skate complex (= *D. batis*, which has recently been differentiated into *D. flossasda* and *D. intermedia*, see Additional Considerations)	VI	Depleted	Depleted stock, no targeted fishery, minimize bycatch
	VII a-c, e-j	Depleted	Depleted stock, no targeted fishery, minimize bycatch
R.. clavata (thornback ray)	VI	Increasing	+20%
	VIIa,f,g	Increasing	+20%
	VIIe	Stock to be determine (should refer to North Sea Divisions)	
R.. montagui (spotted ray).	VI	Descreasing	-23%
	VIIa,f,g	Increasing	+20%
L. naevus (cuckoo ray)	VI	Decreasing	-36%
	VIIa-c, e-j	Decreasing	-36%
R. brachyura (blonde ray)	VIa	Uncertain	- 20%
	VIIafg	Uncertain	- 20%
		Stock to be determine (should refer to North Sea Divisions)	
R.. undulata (undulate ray)	VIIj	Depleted	No targeted fishery, minimize bycatch
	VIId,e		No advice
R. microocellata (small-eyed ray)	VIIfg	Decreasing	- 36%
L. circularis (sandy ray)	VI, VII	Uncertain	-20%
R. fullonica (shagreen ray)	VI, VII	Uncertain	-20%

[3] Note that where a proportional reduction in catch is advised this is intended to indicate the reduction required in 2013 compared to 2012. The resulting catch value for 2013 would also be the advised value for 2014.

Dipturus oxyrinchus (long-nose skate)	VI-VII		No advice
Dipturus nidarosiensis (Norwegian skate)	VI		No advice
Rostroraja alba (White skate)	VII		Retain on prohibited species list

ICES provides advice on the overall exploitation (landings and discards) of the ray and skates species assemblage, and also individual species. ICES does not advise that species-specific TACs be established, at present. This is because a TAC is not considered the most effective means to regulate fishing mortality in these, mostly bycatch, species.

ICES advises that a suite of species- and fishery-specific measures be developed to manage the fisheries on the commercial species and achieve recovery of the depleted species. Such measures should be developed by management authorities involving all stakeholders; ICES could assist in this process.

Management measures should be framed in a mixed-fisheries context, considering the overall behaviour of demersal fleets, and the drivers for such behaviour. These species are mainly caught in mixed fisheries. When the TAC is exhausted, catches continue to take place, but are discarded. In order to achieve optimal harvesting of the commercial species, and to assist recovery of the depleted species, a suite of measures should be put in place.

Closure to fishing of spawning and/or nursery grounds, and measures to protect the spawning component of the population (e.g. maximum landing size) are powerful tools to protect rays and skates. In some cases, single-species TACs may be appropriate, but their effects should be carefully evaluated for each specific case before implementation.

Given that the European Community intends to introduce a ban on discards, minimum or maximum landing sizes should be carefully considered before they are introduced, because they could lead to increased discards.

ICES advises that white skate (*Rostroraja alba*) remains on the Prohibited Species List, as it appears to be depleted in the Celtic Sea ecoregion

Outlook for 2011-2012

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data.

No targeted fishing should be permitted for *Raja undulata* and the *Dipturus batis* complex.

MSY approach

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2013 and 2014. Given the stable, possibly increasing stock trend for the main commercial skate species, as indicated by fishery-independent trawl surveys, but that the exploitation status is unknown, the catch should be maintained at recent levels.

Advice is provided based on an examination of the stock status of each of the different stocks in the divisions within the ecoregion, with the advice for the majority of the stocks provided.

STECF COMMENTS: STECF agrees with the ICES advice.

TACs for individual species within the demersal elasmobranch assemblage are not appropriate, with the exception of a zero TAC for those stocks known to be severely depleted (i.e., *D. batis, R. undulata, S. squatina,* and *R. alba*).

3.20 *Sciyliorhinus canicula* and *Sciyliorhinus stellaris* in Subareas VI and VII

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

3.20.1 Lesser-spotted dogfish (*Scyliorhinus* canicula) in Subarea VI and Divisions VIIa–c, e–j (Celtic Sea and west of Scotland)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: This species is taken primarily as a by-catch in demersal fisheries targeting other species and a large proportion of the catch is discarded, although in some coastal areas there are seasonal small-scale directed fisheries

Some demersal sharks, including lesser-spotted dogfish, may benefit from scavenging on trawl-damaged organisms and discards.

Lesser-spotted dogfish is a small, productive, oviparous shark. It is one of the most common small sharks in this ecoregion. It has a high discard survival rate.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

F_{MSY} is not currently definable for these stocks, unless further information is available, including a better assessment of the species composition of the landings. Reference points cannot be defined.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation		Decreasing

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Increasing

The stock is estimated to be increasing. Survey catch rates are increasing throughout the ecoregion. The average of beam trawl survey (BTS-Q3), assumed as stock size indicator, in the last two years (2010-2011) is 35% higher than the average of the five previous years (2005-2009). The average of the international bottom trawl surveys in the North Sea (IBTS-Q1), assumed as a stock size indicator, in the last two years (2010-2011) is 26% higher than the average of the five previous years (2005-2009).Catches are stable or increasing, though data are not complete. Given the increase in abundance, and stable/increasing catches, it can be inferred that exploitation (fishing mortality) is stable or decreasing.

Species	**Area**	**State of stock**
S. canicula (lesser spotted dogfish)	VI and VII a-c, e-j	increasing in all areas.

RECENT MANAGEMENT ADVICE:

Scyliorhinus canicula (Lesser-spotted dogfish)

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	Maintain catch at recent level
Cautiously avoid impaired recruitment (Precautionary Approach)	Maintain catch at recent level
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

There is no TAC in place for *Scyliorhinus canicula.*

Advice for 2013 and 2014 by individual stocks

Species	**Area**	**Advice**
S. canicula (lesser spotted dogfish)	VI and VII	Maximum catch increase of 20%

Outlook for 2013-2014

No reliable quantitative assessment can be presented for this stock. Therefore, no catch projections are available.

MSY approach

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2013 and 2014.

Other consideration

Landings are not considered to be reliable as this species can be landed using generic categories such as "dogfish and hounds". High levels of discarding take place. As there is no TAC for lesser-spotted dogfish, there is no obligation to report these at species level.

Fishery-independent trawl surveys provide the longest time-series of species-specific information.

The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014.

3.20.2 Greater-spotted dogfish (*Scyliorhinus stellaris*) in Subarea VI and VII

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: This species is taken primarily as a by-catch in demersal fisheries targeting other species and a large proportion of the catch is discarded, although in some coastal areas there are seasonal small-scale directed fisheries.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

F_{MSY} is not currently definable for these stocks, unless further information is available, including a better assessment of the species composition of the landings. Reference points cannot be defined.

STOCK STATUS:

	F (Fishing Mortality)		
	2007	2008	**2009**
$\mathbf{F}_{msy}$		?	
F_{pa} / F_{lim}		?	

	SSB (Spawning Stock Biomass)		
	2008	2009	**2010**
MSY $B_{trigger}$		?	
B_{pa} / B_{lim}		?	

In the absence of formal stock assessments and defined reference points for *Scyliorhinus spp.* in this eco-region, the following provides a qualitative evaluation of the general status of the major species, based on surveys and landings.

Species	**Area**	**State of stock**
S. stellaris (greater spotted dogfish)	VIIa,e,f	Locally common. Survey catches appear to be increasing in VIIa, but there is a poor signal in other areas due to low catches.

RECENT MANAGEMENT ADVICE:

Advice for 2011 and 2012 by individual stocks

Species	**Area**	**Advice**
S. stellaris (greater spotted dogfish)	VIIa,e,f	No advice

Outlook for 2012-2013

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data.

MSY approach

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2011 and 2012.

Additional information

The UK (England and Wales) westerly IBTS survey also had stations along the west coast of Wales. Although they are captured regularly in this survey, catches com- prised few individuals. These UK surveys have tagged and released a number of greater-spotted dogfish in recent years, which will hopefully provide further infor- mation to aid in stock identification.

STECF COMMENTS: STECF agrees with the ICES advice

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3.21 Tope (*Galleorhinus galeus*) in ICES Subareas VI and VII

The advice for tope at the NE Atlantic regional level is given in Section 8.12 of this report. At present, STECF is unable to provide additional information and advice for subareas VI and VII separately.

3.22 Other Demersal elasmobranches in the Celtic Seas and West of Scotland

Advice from ICES for Angel sharks **(***Squatina squatina*) and Smooth Hounds (*Mustellus spp*) is provided at the NE Atlantic regional level and is given in Sections 8.19 and 8.20 of this report.

3.23 Herring (*Clupea harengus*) in Division VIa North

FISHERIES: Historically, catches have been taken from this area by three fisheries:

1) A Scottish domestic pair trawl fleet and the Northern Irish fleet operating in shallower, coastal areas, principally fishing in the Minches and around the Island of Barra in the south; younger herring are found in these areas. This fleet has reduced in recent years.
2) The Scottish single-boat trawl and purse seine fleets, with refrigerated seawater tanks, targeting herring mostly in the northern North Sea, but also operating in the northern part of Division VIa (N). This fleet now operates mostly with trawls, but many vessels can deploy either gear.
3) An international freezer-trawler fishery has historically operated in deeper water near the shelf edge where older fish are distributed. These vessels are mostly registered in the Netherlands, Germany, France, and England, but most are Dutch owned.

In recent years the age structure of the catch of these last two fleets has become more similar. A stricter enforcement regime in the UK is responsible for the major decrease in area misreporting in 2006.

The fishery is conducted by single and pair Refrigerated Sea Water (RSW) trawlers and single-trawl freezer trawlers. Prior to 2006 there was a fairly even distribution of effort, both temporally and spatially. Since 2006 the majority has been fished in the northern part of Division VIa (North) in the 3rd quarter. Catches in 2013 were 22,978 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is based on catch data and an acoustic survey. This assessment is considered to be noisy but unbiased. Misreporting has decreased since 2006 and the quality of the catch data has improved.

REFERENCE POINTS:

	Type	Value	Technical basis
Management plan	SSB_{MGT}	> 75 000 t.	See ((EC) 1300/2008, Art. 3).
	F_{MGT}	F_{3-6} = 0.25.	If SSB in TAC year ≥75 000 t ((EC) 1300/2008, Art. 3).
		F_{3-6} = 0.20.	If SSB in TAC year < 75 000 t and ≥50 000 t ((EC) 1300/2008, Art. 3).
		F_{3-6} = 0.00.	If SSB in TAC year < 50 000 t ((EC) 1300/2008, Art. 3).
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.25	Simulations under different productivity regimes (Simmonds and Keltz, 2007; ICES, 2010).
Precautionary approach	B_{lim}	50 000 t.	Lowest reliable estimate of SSB.
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(unchanged since: 2010)

MANAGEMENT AGREEMENT: The EU management plan (Council Regulation (EC) 1300/2008) is based on the following rule.

SSB in the year of the TAC	Fishing mortality	Maximum TAC variation
SSB > 75 000 t	F = 0.25	20%
SSB < 75 000 t	F = 0.2	20%
SSB < 62 500 t	F = 0.2	25%
SSB < 50 000 t (B_{lim})	F = 0	-

ICES has evaluated the plan and concludes that it is in accordance with the precautionary approach.

Agreed Management Plan for VIaN herring: Council Regulation 1300/2008

1. Each year, the Council, acting by qualified majority on the basis of a proposal from the Commission, shall fix for the following year the TAC applicable to the herring stock in thearea west of Scotland, in accordance with paragraphs 2 to 6.

2. When STECF considers that the spawning stock biomass level will be equal or superior to 75 000 tonnes in the year for which the TAC is to be fixed, the TAC shall be set at a level which, according to the advice of STECF, will result in a fishing mortality rate of 0.25 per year. However, the annual variation in the TAC shall be limited to 20%.

3. When the STECF considers that the spawning stock biomass level will be less than 75 000 tonnes but equal or superior to 50 000 tonnes in the year for which the TAC is to be fixed, the TAC shall be set at a level which, according to the advice of STECF, will result in a fishing mortality rate of 0,2 per year. However, the annual variation of the TAC shall be limited to:

(a) 20% if the spawning stock biomass level is estimated to be equal or superior to 62 500 tonnes but less than 75 000 tonnes;

(b) 25% if the spawning stock biomass level is estimated to be equal or superior to 50 000 tonnes but less than 62 500 tonnes.

4. When STECF considers that the spawning stock biomass level will be less than 50 000 tonnes in the year for which the TAC is to be fixed, the TAC shall be set at 0 tonnes.

5. For the purposes of the calculation to be carried out in accordance with paragraphs 2 and 3, STECF shall assume that the stock will experiences a fishing mortality rate of 0,25 in the year prior to the year for which the TAC is to be fixed.

6. By way of derogation from paragraphs 2 or 3, if STECF considers that the herring stock in the area west of Scotland is failing properly to recover, the TAC shall be set at a level lower than that provided for in those paragraphs.

STOCK STATUS:

	Fishing pressure		
	2011	2012	**2013**
MSY (F_{MSY})	✓	✓	✗ Just above target
Precautionary approach (F_{pa},F_{lim})	?	?	? Undefined
Management plan (F_{MGT})	✓	✓	✗ Just above target
Stock size			

	2011	2012	2013	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Above Blim
Management plan (B_{MGT})	o	✓	✓	Above trigger

Since 1977, the stock has been fluctuating at a considerably lower biomass than in the previous 20 years. Fishing mortality has fluctuated around F_{MSY} in recent years, and recruitment is lower than in the historical period.

RECENT MANAGEMENT ADVICE

ICES advises on the basis of the agreed West of Scotland herring management plan that catches should be no more than 22 690 tonnes. ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring, such as extraction of marine aggregates and marine construction on the spawning grounds, should not occur.

Management plan

Following the agreed management plan implies a TAC of 22 690 t in 2015 which is equivalent to a TAC decrease of 19%. SSB in 2015 is estimated to be above 75 000 t implying an F target of F = 0.25, constrained by a maximum 20% TAC increase.

A similar management plan was evaluated by ICES in 2005 and found to be consistent with the precautionary approach. This plan was subsequently revised with additional biomass triggers and TAC constraints, and it was further evaluated by ICES (Simmonds and Keltz, 2007; ICES, 2008). In 2008 ICES checked that the changes in stock dynamics and the changes to the plan had not significantly increased the risks, and therefore, the plan was still considered to be consistent with the precautionary approach (ICES, 2009).

Other considerations

MSY approach

Following the ICES MSY approach implies a fishing mortality at F_{MSY} = 0.25, resulting in catches of no more than 22 690 t in 2015. This is expected to lead to an SSB of 81 352 t in 2015. As no MSY $B_{trigger}$ has been identified for this stock, the ICES MSY approach has been applied with F_{MSY} without consideration of SSB in relation to MSY $B_{trigger}$.

Precautionary approach

The SSB is well above B_{lim}. In the short term, SSB is expected to stay above B_{lim}. F_{pa} is undefined, but the current F is around F_{MSY}.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

3.24 Herring (*Clupea harengus*) in the Clyde (Division VIa)

The most recent advice for this stock was provided by ICES in 2005.

FISHERIES: There are two stock components present on the fishing grounds, resident spring-spawners and immigrant autumn-spawners. The UK exploits the small stock of herring in this area. TACs have been set at 800 t since 2006. Since 1999, annual landings have varied from no fishing in 2004 to around 300 t in 2012.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No analytical assessment has been made in recent years and no independent survey data are available for recent years.

In 2011 under the provisions of the TAC and Quota Regulations (57/2011), the European Commission delegated the function of setting the TAC for certain stocks which are only fished by one Member State, to that Member State. This provision currently applies to herring in the Firth of Clyde with TAC setting responsibility delegated to UK. Since 1998 the agreed TAC for Clyde herring has never been reached.

REFERENCE POINTS: No precautionary reference points have been proposed for this stock.

STOCK STATUS The available information is inadequate to evaluate stock trends, and the state of the stock is uncertain.

RECENT MANAGEMENT ADVICE: Until new evidence is obtained on the state of the stock, existing time and area restrictions on the fishery should be continued.

STECF COMMENTS: STECF did not have access to any additional stock assessment information on herring in the Clyde (Division VIa).

3.25 Herring (*Clupea harengus*) in Division VIa south and VIIbc

FISHERIES: Since 2008 only Ireland has recorded catches from this area. Between 1988 and 1999 catches varied between 26,109 and 43,969 tonnes. Catches have declined in recent years with 13,040 t reported in 2008, falling to 3,900t in 2013. The fishery is conducted both inshore and offshore on the northwestern Irish coast. The small quotas in recent years mean that the fishery is confined to a small number of locations. Discards are considered negligible.

The fishery exploits a mixture of autumn-and winter/spring-spawning fish. The winter/spring-spawning component is distributed in the northern part of the area. The main decline in the overall stock appears to have taken place on the autumn-spawning component.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment is exploratory, but it is considered as a good indicator of trends over time. Considerable progress has been made to disaggregate the Malin Shelf Acoustic Survey and provide information on the Divisions VIa (South) and VIIb,c stock component and this work has provided a stock-specific, fisheries-independent index for this stock. The 2014 assessment uses this stock specific index for the first time.

REFERENCE POINTS:

	Type	***Value (absolute)***	***Value (relative to the long-term mean)***	***Technical basis***
MSY approach	MSY $B_{trigger}$	Not defined		
	F_{MSY}	0.25	0.65	Stochastic simulations from segmented regression stock–recruitment relationship.
Precautionary approach	B_{lim}	81 000 t	0.95	Reliable estimate of B_{loss} 1998.
	B_{pa}	110 000 t	1.28	$1.4 \times B_{lim}$
	F_{lim}	0.33	0.85	F_{loss}
	F_{pa}	Not defined.		
Management	SSB_{MGT}	110 000 t	1.28	Trigger in proposed rebuilding plan.

plan	F_{MGT}	0.17	0.44	Lowest recent estimate of $F_{0.1}$.

(last changed in: 2013)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✗	✗	✗	Harvested unsustainably
Qualitative evaluation	↘	↘	↘	High, but declining
Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity
Qualitative evaluation	↘	↘	↘	Declining

This is an exploratory assessment. The stock is at the lowest observed in the time-series and below the SSB in 1998 (B_{lim}) reference points. F has been high for the last 15 years and is well above possible reference points. Recruitment has been very low in recent years.

PROPOSED REBUILDING PLAN

Text of the Division VIa (South) and VIIIb,c herring rebuilding plan proposed by the Pelagic RAC in July 2013:

1. The aim of this plan is to rebuild SSB to above the level consistent with unacceptable risk of recruitment impairment.

2. For 2014, and subsequent years, the TAC shall be set based on fishing mortalities, as follows:

a. $SSB > B_{pa}$, $F = F_{0.1}$

b. $SSB < B_{pa}$ $F = SSB * (F_{0.1} / B_{pa})$

3. If an assessment is available, but is considered by ICES to be indicative of trends, rather than as an estimation of stock size, (ICES DLS Category 2),, then the TAC settings in paragraph 2 shall apply, but the TAC shall be down-weighted by a factor (G) (see explanation below) based on the level of uncertainty.*

4. The TAC for the following year shall be set at a lower level than provided for in Paragraphs 2 or 3, based on advice from ICES or STECF, if, in the opinion of ICES, SSB is at risk of being below B_{lim} and if these agencies consider such additional action to be appropriate.

5. In order to provide for separate management of this stock, relative to that in VIaN, every effort shall be made to disaggregate abundance-at-age data in Division VIa.

6. In order to avoid by catches and unaccounted mortality of this stock, and in light of the problem of disaggregating stock-specific data, it is necessary to establish an interim temporary exclusion zone for 2 years. In anticipation of results of the analyses being conducted by ICES, and until better information on stock mixing is available, a temporary exclusion zone, prohibiting herring fishing,

shall be established that lies between 56°N and 57°30 N, in Sub-Division VIa N. This exclusion only applies outside 6 nautical miles. It should be noted that this exclusion will only affect catches of herring by the Irish Fleet in VIaN.

7. When SSB is deemed to have recovered to a size equal to or greater than Bpa in three consecutive years, the rebuilding plan will be superseded by a long-term management plan.

***Uncertainty down-weighting parameter G**

The parameter G is defined as follows:

$G = TAC * exp^{(-1.645 * \sigma)}$

where σ refers to the Coefficient of Variation of the final year SSB estimate.

RECENT MANAGEMENT ADVICE

ICES advises on the basis of the precautionary considerations that there should be zero catch in 2015. ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring, such as extraction of marine aggregates and marine construction on the spawning grounds, should not occur.

Other considerations

Management plans

The management area does not contain the stock. Catches of the stock from beyond the boundary of the TAC area are referred to as "trans-boundary catches" and are estimated based on expert judgment of recent years' fishing patterns. A rebuilding plan was proposed by the Pelagic RAC in 2013. This was evaluated by STECF in 2013 (STECF, 2013), and it was found to be capable of rebuilding the stock to above B_{pa} only if transboundary catches are eliminated. When transboundary catch is accounted for there is no catch option other than zero that is consistent with Clauses 2 and 3 of the rebuilding plan. The plan would imply catches of 90 t in 2015, before transboundary catch is adjusted for. The aim of the plan is to restore the stock to above B_{pa}. ICES has not evaluated this plan, and hence does not provide advice based on this management plan.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice based on precautionary considerations that there should be zero catch in 2015.

STECF evaluated the proposed rebuilding plan for this stock in 2013 and it was found to be capable of rebuilding the stock to above B_{pa} only if transboundary catches are eliminated.

STECF notes that when transboundary catch is accounted for there is no catch option other than zero in 2015 that is consistent with the provisions of Clauses 2 and 3 of the rebuilding plan.

3.26 Herring (*Clupea harengus*) in Division Vb and VIb.

No assessment is made for these areas and no information was available to STECF from these areas.

3.27 Pollack (*Pollachius pollachius*) in western waters

The stock status and advice for this stock for 2015 remains unchanged from that given for 2013 and 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-11).

FISHERIES: French and Irish data indicate that most pollack in the Celtic Sea ecoregion is caught by trawls and gillnets. Other gears such as lines, seine nets and beam trawls contribute to a lesser

extent. In 2013, 98% of the landings originated from Subarea VII, with Ireland, UK and France together comprised 99% of the official landings. Landings in 2013 were around 4,800t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate the exploitation and the trends of pollack in the Celtic Sea ecoregion.

RECENT MANAGEMENT ADVICE

New landings data available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014. ICES advises on the basis of the data-limited approach but cannot quantify the resulting catches. The implied commercial landings should be no more than 4200 tonnes.

Other considerations

ICES approach to data limited stocks

For data limited stocks with an approximate natural mortality rate of < 0.2 and only catch or landings data available, ICES considers the Depletion-Corrected Average Catch (MacCall, 2009), an extension of the potential-yield formula, as a method for estimating sustainable yield for data-poor fisheries.

For these subareas VI and VII, historic catch statistics from 1986 to 2011 were used. The recent catch (last three year average) in VI is less than average DCAC suggested catch. For this area a step increase of 10% is applied to the recent catch. In area VII the recent catch was very similar to the average DCAC suggested catch. This corresponds to catches of no more than 4200 tonnes for subareas VI and VII, which is roughly 1% more than recent catch.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the landings corresponding to ICES advice for 2013, 2014 and 2015 imply a 10% increase on the average reported landings over the years 2009-2011.

STECF further notes that following the ICES approach to data-limited stocks, the advised catches for this stock for 2013, 2014 and 2015 would have been much greater then 4200t, if all Member States had fully-utilised their quota entitlements over the years 2009-2011.

STECF notes that recreational catches are not included in the DCAC analysis. From an ICES examination of preliminary data it seems likely that catches in recreational fisheries are of a similar order of magnitude to, or larger than, commercial landings.

3.28 Greenland halibut (*Reinhartius hippoglossoides*) in western waters

Greenland halibut is a deep sea species and widely distributed in the Northeast Atlantic covering various ICES Divisions. The different management areas are those in

Norwegian waters and international waters (I and II),

Greenland waters and international waters (Va and XIV),

Icelandic waters (Va),

Faroese (Vb) and

EU waters of IIa and IV; EU and international waters of Vb and VI.

Low landings are also taken in international waters of XII.

For advice on the stock component in subareas V and VI refer to Section 5.6 which provides the stock summary and management advice covering the management areas in Greenland waters (XIV and Va), Icelandic waters (Va), Faroese waters Vb, European waters in VI as well as international waters in VI, XII and XIV.

3.29 Grey Gurnard (*Eutrigla gurnardus*) in western waters

The stock status and advice for this stock for 2015 remains unchanged from that given for 2013 and 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-11).

FISHERIES: Currently, grey gurnard is a bycatch species in demersal fisheries, mainly by trawlers. Catches are largely discarded. Official landings for 2011 were 82t and increased to 275 t in 2012. Preliminary landings in 2013 were 723 t. Discards are unknown.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS:

No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)	
	2009–2011
Qualitative evaluation	? Insufficient information

SSB (Spawning-Stock Biomass)	
	2009–2011
Qualitative evaluation	Insufficient information

The available information is inadequate to evaluate overall biomass or abundance trends. Landings data are not presented for this species because gurnard catches were often reported in one generic category of “gurnards” until 2010. In addition, landings data are considered only marginally informative because catches are mainly discarded.

RECENT MANAGEMENT ADVICE:

New landings and survey data do not change the perception of the stock. Therefore, the advice for 2015 is the same as the advice for 2013 and 2014: "*ICES advises on the ICES approach to data-limited stocks, implying that catches in 2013 should be reduced by 20% in relation to the average catch of the last three years. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result*".

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, the ICES approach to data-limited stocks implies that catches should decrease by 20% in relation to the average catch of the last three years. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and notes that there is no rational basis for providing a catch figure for 2015. Furthermore, STECF interprets the ICES advice to mean that catches in 2015 should be limited to a 20% reduction on the average of the catches for the period 2009-2011.

STECF notes that ICES has a difficulty providing a catch figure as the available information is inadequate to evaluate overall biomass or abundance trends.

STECF notes that gurnard catches were often reported in one generic category of "gurnards" until 2010. In addition STECF notes that landings data are considered only marginally informative because catches are mainly discarded.

3.30 Red Gurnard (*Aspitrigla cuculus*) in western waters

STECF did not have access to any recent stock assessment information on red gurnard in western waters. Advice from ICES on red gurnard is provided at the NE Atlantic regional level and is given in Section 8.7 of this report.

3.31 Red mullet (*Mullus barbartus* and *Mullus surmelutuss*) in western waters (Subareas and Divisions VI, VIIa-c, e-k, VIII, and IXa)

Advice for this stock for the years 2013 and 2014 was given in 2012 and the text below remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27). Advice for 2015 is not yet available.

FISHERIES: In 2010, 60% of the landings originated from Subarea VIII. Most of the catch is taken by the French and Spanish bottom trawler fleets. In the Bay of Biscay a fly-shooting fisheries has developed recently. Observer information indicates that there is very little discarding (no minimum landing size has been determined).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)	
	2009–2011

Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation		Insufficient information

There is limited information to evaluate stock trends. The landings have shown an increase since the mid-1990s and they are now stable and above average (essentially in Subarea VIII). Recruitment indices fluctuate without trend although there is some indication of several large year classes in the early 2000s.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the approach to data-limited stocks that catches should be no more than 2000 tonnes. This is the first year ICES is providing quantitative advice for data-limited stocks.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the average catch of the last three years (2008–2010), corresponding to catches of no more than 2000 t in 2013.

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014.

3.32 Seabass (*Dicentrarchus labrax*) in Divisions VIa, VIIb, and VIIj (West of Scotland and Ireland)

FISHERIES: Seabass is an important recreational fishery targeted around the coast of Ireland. A moratorium on commercial fishing for this species by Irish vessels has been in place since 1990; as a result, unavoidable catches of Irish commercial vessels are discarded. The very small commercial catches are made predominantly by French vessels. Preliminary landings in 2013 are less than 1 tonne. No discards information is available, but discarding is known to occur.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The only available information is official landings.

REFERENCE POINTS:

No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2011–2013	
Qualitative evaluation	?	Insufficient information

Official reported landings are higher than one tonne after 2000 (except in 2012 and 2103 but the 2013 landings estimate is still preliminary). Seabass official landings have been around 10 tonnes after 2007, with the exception of 2011, when higher catch values were recorded. Most of the catches are taken from Division VIIj.

RECENT MANAGEMENT ADVICE:

The revised landings data do not change the perception of the stock but result in a revision of the advised landings. Therefore, ICES advises based on the data-limited stocks approach, but cannot quantify the resulting catches. The implied commercial landings should be no more than 5 tonnes.

Currently there is no TAC for this species in this area, and it is not clear whether this should constitute a separate management unit. ICES does not necessarily advocate the introduction of a TAC for sea bass in this area

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on biomass or abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that landings should decrease by 20% in relation to the average of the last three years with official landings information (2009–2011), corresponding to commercial landings of no more than 5 tonnes in 2015. No information on discards is available therefore it is not possible to provide commercial catch advice.

STECF COMMENTS:

Given the complete absence of information on recreational catches of seabass from these areas, STECF is unable to judge whether the ICES advice to restrict commercial landings to no more than 5 tons in 2015 is likely to be an effective management measure.

3.33 Cod (*Gadus morhua*) in area VIIa (Irish Sea Cod)

The advice for this stock for 2015 and 2016 remains unchanged from that given for 2013 and 2014.

FISHERIES: The Irish Sea cod fishery has traditionally been carried out by otter trawlers targeting spawning cod in spring and juvenile cod in autumn and winter. Activities of these vessels have decreased, whilst a fishery for cod and haddock using large pelagic trawls increased substantially during the 1990s. In recent years the pelagic fishery has also targeted cod during the summer. Cod are also taken as a by-catch in fisheries for *Nephrops*, plaice, sole and rays. Landings are taken entirely by EU fleets and were between 6,000 t and 15,000 t from 1968 to the late 1980s. There has since been a steep decline in landings to levels as low as 1,300 t in 2000. There has been a slight increase from this level in 2001 and 2002 (up to 2,700 t) but since then, landings have continuously declined to the record low value of 200 t in 2012. The quality of the commercial landings and catch-at-age data for this stock deteriorated in the 1990s following reductions in the TAC without associated control of fishing effort. Legislation introduced in Britain and Ireland in 2006 has reduced misreporting. Total catches in 2013 are unknown. Taking into account misreporting of catches between Division VIIa and VIIfg, estimated landings from VIIa in 2013 were 206 t. Discard estimates are available, but are not included in the assessment.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment using commercial and survey data (SAM).

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY	MSY $B_{trigger}$	10 000 t	B_{pa}
Approach	F_{MSY}	0.4	Provisional proxy. Fishing mortalities in the range of 0.25–0.54 are consistent with F_{MSY}.
Precautionary Approach	B_{lim}	6000 t	B_{lim}= $B_{loss,}$ lowest observed level.
	B_{pa}	10 000 t	B_{pa} = MBAL; this level affords a high probability of maintaining the SSB above B_{lim}. Below this value the probability of below-average recruitment increases.
	F_{lim}	1.00	F_{lim}= F_{med}
	F_{pa}	0.72	F_{pa}: F_{med}* 0.72. This F is considered to have a high probability of avoiding F_{lim}. Fishing mortalities above F_{pa} have been associated with the observed stock decline.

(unchanged since: 2010)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✗	✗	✗	Harvested unsustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduce reproductive capacity

Fishing mortality has been declining in recent years and is uncertain, but remains above F_{lim}. The spawning-stock biomass has declined tenfold since the late 1980s and has had reduced reproductive capacity since the mid-1990s. The spawning-stock biomass increased from 2010, although it still remains well below B_{lim}. Recruitment has been low since the mid-1990s.

MANAGEMENT AGREEMENTS:

To rebuild the SSB of the stock, a spawning closure was introduced in 2000 for ten weeks from mid-February which was argued to maximize the reproductive output of the stock (EU Regulations 304/2000 and 549/2000). The measures were revised in 2001, 2002, 2003 and 2004, involving a continued, but smaller spawning ground closure, coupled with changes in net design to improve selectivity.

The EU has adopted a long-term plan for cod stocks and the fisheries exploiting those stocks (Council Regulation (EC) 1342/2008). This regulation repeals the recovery plans in Regulation

(EC) No 423/2004, and has the objective of ensuring the sustainable exploitation of the cod stocks on the basis of maximum sustainable yield while maintaining a target fishing mortality of 0.4 on specified age groups.

The regulation is complemented by a system of fishing effort limitation (see EC 43/2009 for latest revision).

ICES has evaluated the management plan and found that all scenarios with the TAC constraints imposed (±20%) show very low probabilities of recovering the stock to B_{lim} by 2015. ICES therefore considers the management plan not to be in accordance with the precautionary approach. If the TAC constraint is taken off, the chances of recovering the stock before 2015 increase significantly, although they remain low.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013 and 2014. The new data available do not change the perception of the stock. Therefore, the same catch advice is still applicable for 2015 and 2016. ICES advises on the basis of the MSY and precautionary approaches that there should be no directed fisheries, and bycatch and discards should be minimized in 2015 and 2016.

Other considerations

Management plan(s)

A long-term plan was agreed by the EU in 2008 (Council Regulation (EC) 1342/2008), resulting in TACs of 285 t in 2013 and 228 t in 2014. ICES (2009a, 2009b) evaluated the plan and does not consider the management plan to be in accordance with the precautionary approach.

MSY and Precautionary approaches

Considering the current reduced reproductive capacity of the stock, ICES advises on the basis of the MSY and precautionary approaches that there should be no directed fisheries, and bycatch and discards should be minimized in 2015 and 2016.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

STECF notes that following the agreed Management Plan would imply a TAC of 171 t and a further 25% reduction in effort in 2015 compared to 2014.

3.34 Cod (*Gadus morhua*) in areas VIIe-k

FISHERIES: Cod in Divisions VIIe-k are taken as a component of mixed trawl fisheries. Landings are made mainly by French gadoid trawlers, which prior to 1980 were mainly fishing for hake in the Celtic Sea. Landings peaked in 1989 at 20,000 t following which they have been maintained between 6,000t and 13,000t until 2003. From 2004 to 2010 landings have been between 3,000t and 5,000t. Landings have increased in 2011 and 2012 to 7,200t and 7,600t respectively. Landings decreased in 2013 to 6,200 t. All landings are taken by EU fleets.

Cod is caught in a range of fisheries, including otter trawl fisheries targeting gadoids, Nephrops, or mixed demersal fish, beam trawl fisheries, and gillnet fisheries. Landings are made throughout the year, but tend to be higher during the first half of the year. The TACs have constrained catches since 2003 and the impact of the Trevose Head closure applied since 2005 has resulted in landings being spread throughout the year.

Highgrading occurred during the first part of 2011 before the TAC was revised. In 2012 and 2013, the TAC was not fully caught, mainly due to mixed-fisheries considerations for France. In 2012 and

2013 the TAC was not restrictive and the amount and length composition of the discards were similar to those observed before 2011, around 10% of the catches by weight.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based assessment using commercial and survey data.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	10 300 t.	Provisionally set at B_{pa}.
	F_{MSY}	0.40	Provisional proxy based on F_{max} (ICES, 2011).
Precautionary approach	B_{lim}	7 300 t.	SSB in 1976.
	B_{pa}	10 300 t.	$B_{pa} = B_{lim} \times 1.4$. Biomass above this value affords a high probability of maintaining SSB above B_{lim}, taking into account the variability in the stock dynamics and the uncertainty in assessments.
	F_{lim}	Undefined.	
	F_{pa}	Undefined.	

(unchanged since: 2012)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

Recruitment has been highly variable over time with occasional very high recruitment (e.g. 1987 and 2010). The 2011 and 2012 year classes are estimated well below the average of the time-series. SSB has increased from below B_{lim} to well above MSY $B_{trigger}$ since 2010 and is now decreasing as the result of low recruitment in recent years. Fishing mortality shows a declining trend since 2005, was around the F_{MSY} proxy in 2011, and has increased since then.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach, but cannot quantify the resulting catches. The implied landings should be no more than 3544 tonnes.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.37 (lower than F_{MSY} because SSB is 8% below MSY $B_{trigger}$). ICES cannot quantify the resulting catches. The implied landings should be no more than 3544 t. Discards are known to take place but cannot be fully quantified.

STECF COMMENTS: STECF agrees with the ICES assessment of stock status and advice for 2015.

3.35 Haddock (*Melanogrammus aeglefinus*) in Division VIIa (Irish Sea)

FISHERIES: Haddock in Division VIIa are taken in *Nephrops* and mixed demersal trawl fisheries, using mid-water trawls and otter trawls, and in seine net fisheries. The haddock TAC has not been fully caught in recent years, mainly due to the restricted TAC for cod. Landings are made throughout the year, but are generally more abundant during the third quarter. Since 2012 it has been mandatory for all Irish and UK (Northern Ireland) vessels to use specified species-selective gears. These gears are primarily aimed at reducing cod bycatch, but will also reduce haddock catch, although this cannot be quantified. Discard estimates are very variable.

Total catch (2013) was 537 t (47% landings and 53% discards).

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES who advises on the basis of a trends based analysis based on a single survey.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	Not defined.	
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	0.5	ICES proposed that F_{pa} be set at 0.5 by association with other haddock stocks.

(unchanged since: 1998)

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
		2012–2014
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation		Increasing

The assessment is indicative of trends only. Trends in SSB from the assessment indicate that the average of the stock size indicator in the last two years (2013–2014) is 22% higher than the average of the three previous years (2010–2012). SSB trends are fluctuating due to the dependence of incoming year classes. The relative recruitment estimate for age 1, in 2014, is the highest in the series.

Management plans

There is currently no explicit management plan for this stock.

RECENT MANAGEMENT ADVICE:

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 893 tonnes. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 425 tonnes.

Further technical measures should be introduced to reduce discards.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which a biomass index is available, ICES uses a harvest control rule based on index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated to have increased by more than 20% between the periods 2010–2012 (average of the three years) and 2013–2014 (average of the two years). This implies an increase in catches of at most 20% in relation to the average catches of the last three years (2011–2013), corresponding to catches in 2015 of no more than 893 tonnes. If discard rates do not change from the average of the last three years, this implies landings of no more than 425 tonnes.

Considering that the effort in the main fisheries (TR1) has decreased, no additional precautionary reduction is needed.

ICES landings for this stock have been adjusted to account for landings taken or reported in the southern Division VIIa (Rectangles 33E2–3), resulting in an average of 419 t over the last three years (2011–2013). This may need to be taken into account when setting the TAC for Division VIIa haddock.

STECF COMMENTS: STECF disagrees with the ICES assessment of the state of the stock and the advice for 2015 on the grounds that there is no statistical basis to support the statement that biomass is estimated to have increased by more than 20% between the periods 2010–2012 (average of the three years) and 2013–2014 (average of the two years). There is no discernible trend in the estimates for SSB over the most recent 6 years. Following the ICES approach to data limited stocks, implies that catches in 2015 of 744 t and landings of 354 t, assuming discard rates in 2015 do not change from the average of the last three years.

3.36 Haddock (*Melanogrammus aeglefinus*) in Division VIIb-k (Celtic Sea and West of Ireland)

FISHERIES: Haddock are caught in mixed demersal fisheries with cod, whiting, plaice, *Nephrops*, sole and rays. Some fleets are using 80 mm mesh to target *Nephrops*, 90 mm mesh in mixed

fisheries, and 100 mm to target gadoids and other species. Since 2012 a 110 mm square mesh panel has been mandatory in otter trawls and seine nets using <100 mm codend mesh, and a 100 mm panel has been mandatory for vessels using >100 mm codend in otter trawls and seine nets for part of the Celtic Sea.

Most catches come from otter trawlers, mainly from France and Ireland. The TAC has not been restrictive for haddock. Landings peaked at about 28,000 t in 2012. In 2013, total ICES estimated (preliminary) catches amounted to 15,300 t of which 88% are landings (all fleets combined) and 12% discards.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The advice is based on an assessment carried out in ASAP (Age-Structured Assessment Programme; NOAA toolbox which uses catch data with two survey indices and one commercial tuning index.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	7500 t	B_{loss}
	F_{MSY}	0.33	F_{max}(landings: 0.28 + discards: 0.05)
Precautionary Approach	B_{lim}	Undefined.	
	B_{pa}	Undefined.	
	F_{lim}	Undefined.	
	F_{pa}	Undefined.	

(unchanged since 2012)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

The SSB peaked in 2011 as the very strong 2009 year class matured. However, recruitment has been below average in the years 2010–2012 and the stock is declining rapidly. Recruitment in 2013 was well above average, but not as high as the 2009 cohort. Fishing mortality has been above the F_{MSY} proxy for the full time-series.

Management plans

There is currently no explicit management plan for this stock.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of MSY approach that catches should be no more than 10 434 t in 2015. If discard rates do not change from the average of the full time-series (1993–2013), this implies landings of no more than 5605 t.

Heavy discarding of the strong 2013 cohort is expected in 2014 and 2015 unless additional measures are taken to reduce discarding.

Other considerations

MSY approach

To follow the ICES MSY approach fishing mortality must be reduced to 0.33, which implies catches of no more than 10 434 t. If discard rates do not change from the average of the time-series (1993–2013), this implies landings in 2015 of no more than 5605 t. This is expected to lead to an SSB of 37 251 t in 2016.

STECF COMMENTS:

STECF agrees with the ICES assessment of stock status and on the basis of MSY approach that catches should be no more than 10 434 t in 2015. STECF notes however, that given that the 2013 yearclass is relatively strong, discard rates in 2015 are likely to be higher than the long term average. Hence the proportion of the catch discarded will be higher than that assumed for the ICES advice on landings for 2015. As a result, the value of 5605 t for landings in 2015 is an overestimate but the magnitude of the overestimate is not quantifiable. STECF is therefore unable to predict the proportions of the advised catch for 2015 that will be discarded and landed.

Furthermore, if fishing mortality in 2015 is not reduced to a level less than that assumed for 2014 (F=0.73), catches in 2015 are predicted to be in the region of 19,876 t and discards are predicted to be in the region of 9,318 t, assuming that discard rates in 2015 are in line with the long-term (1993-2013) average rate. This represents a 1.9 fold increase in discards compared to fishing at F_{msy} (0.33) as advised.

3.37 Saithe (*Pollachius virens*) in Div´s VII, VIII, IX, X

STECF did not have access to any recent stock assessment information on saithe in Subareas VII, VIII IX and X.

3.38 Whiting (*Merlangius merlangus*) in VIIa (Irish Sea)

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: Whiting is taken mainly as a by-catch in mixed-species otter trawl fisheries for *Nephrops*, cod, and other demersal species. Only EU vessels exploit the stock, with the UK and Ireland accounting for the majority of the landings, with much smaller quantities landed by Belgium and France. Reports of significant under-reporting of landings indicate that the current implementation of the TAC system is not able to restrict fishing. Landings of whiting by all vessels, and discards of whiting estimated for *Nephrops* fisheries, have declined substantially. From 1989 to 2006, reported landings declined from 11,300 t to less than 100 t. Total catch (2012): 1.45 kt, total landings: 0.05 kt; estimated discards:1.40 kt. Reported catch in 2013 was 992 t, where 33 t were

estimated as landings, 956 t discards (94% *Nephrops* trawls, 2% finfish trawls, 2% beam trawls and 2% other gears).

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Advice is based on survey information only and is considered to be indicative of trends only due to the difficulty in raising discard information and the lack of available landings for sampling at the currently very low retention levels.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Undefined	
	F_{MSY}	Undefined	
Precautionary Approach	B_{lim}	5 000 t	**B**loss (1998); the lowest observed SSB as estimated in previous assessment. There is no clear evidence of reduced recruitment at the lowest observed SSBs.
	B_{pa}	7 000 t	**B**loss * 1.4; considered to be the minimum SSB required to ensure a high probability of maintaining SSB above its lowest observed value, taking into account the uncertainty of assessments.
	F_{lim}	0.95	The fishing mortality above which stock decline has been observed.
	F_{pa}	0.65	This F is considered to have a high probability of avoiding **F**lim. It implies an equilibrium SSB of 10.6 kt, and a relatively low probability of SSB < **B**pa (= 7 kt), and is within the range of historic Fs.

(unchanged since: 1998)

STOCK STATUS

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✖	Above poss. reference points

SSB (Spawning Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	⊗	Below poss. reference points

The state of the stock is uncertain. Long-term information on the historical yield and catch composition indicate that the present stock size is extremely low and likely to be well below Blim. Landings have been declining since the early 1980s, reaching lowest levels in the 2000s. The survey results indicate a decline in relative SSB. Total mortality has been variable over the time series. Current fishing mortality is likely to be above possible MSY targets.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013 and 2014: "*ICES advises on the basis of precautionary considerations that catches should be reduced to the lowest possible levels and that technical measures should be implemented to reduce discards*". The new data does not change the perception of the stock. Therefore, the same catch advice is still applicable for 2015.

Other considerations

Precautionary considerations

SSB has declined to a very low level. Even though the underlying data do not support the provision of estimates of F_{MSY}, it is likely that current F is above F_{MSY}. Given the poor stock status, using the survey trends to identify a non-zero catch is not considered appropriate. Therefore, ICES advises that catches (mainly discards) of whiting should be reduced to the lowest possible levels.

Management by TAC is inappropriate for this stock because landings – but not catches – are controlled. Further management measures should be introduced in the Irish Sea to reduce discarding of small whiting in order to maximize their contribution to future yield and SSB.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that further reductions of the TAC will not lead to the desired decrease in fishing mortality as the vast majority of catches are discarded. STECF therefore considers that the TAC system is supplemented with enhanced technical measures to substantially reduce discards and a mixed fisheries based approach to the management.

3.39 Whiting (*Merlangius merlangus*) in VIIb,c,e-k

FISHERIES: Celtic Sea whiting are mainly taken in a mixed-species fisheries targeting cod, haddock, and whiting with otter trawls and seine nets using >100 mm codend mesh.. French trawlers account for about 60% of the total landings, Ireland takes about 30%, and the UK (England and Wales) 7%, while Belgian vessels take less than 1%. Catches peaked in the late nineties with over 22,000 t reported by ICES and subsequently declined to less than 10,000 t in 2006. Discard rates are very high (mainly ages 1 and 2) due to the low market value of this species, particularly for smaller sizes. Total landings in 2012 were 9,976 t with substantial discards which could not be

quantified. Total catch in 2013 was 14,914 t, where 12,402 t were estimated landings (67% otter trawls, 24% seine nets, 2% beam trawls, and 8% other gears) and 2,512 t discards.

Management regulations, particularly effort control regimes in other areas (VIIa, VI, & IV), became increasingly restrictive in 2004 and 2005 and resulted in a displacement of effort into the Celtic Sea.

Since 2005, ICES rectangles 30E4, 31E4, and 32E3 have been closed during the first quarter (Council Regulations 27/2005, 51/2006, 41/2007 and 40/2008) with the intention of reducing fishing mortality on cod. The effects of the closure on whiting are not known although there have been spatial and temporal changes in the distribution of effort.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Age based analytical assessment (XSA) using 1 survey.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	40 000 t	Lower bound of expected range at $F_{0.1}$
	F_{MSY}	0.32	$F_{0.1}$ as estimated using a stochastic equilibrium analysis on the full time-series.
Precautionary Approach	B_{lim}	25 000 t	$B_{loss,}$ the lowest observed spawning-stock biomass.
	B_{pa}	40 000 t	Lower bound of expected range at $F_{0.1}$.
	F_{lim}	0.5	Increasing risk of reaching B_{lim}.
	F_{pa}	Undefined	

(Last changed in: 2014).

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning-stock biomass increased from 2008 and has been decreasing since 2011, but remains well above MSY $B_{trigger}$. Fishing mortality has shown a declining trend since 2007 and has been below the F_{MSY} proxy since 2011. Recruitment between 2010 and 2012 was below average whereas the 2013 year class is estimated to be the second highest in the series.

Management plans

No specific management objectives are known to ICES.

RECENT MANAGEMENT ADVICE:

ICES advises based on the MSY approach that catches in 2015 should be no more than 18 501 tonnes. If discard rates do not change from the average of the last three years this implies landings of no more than 14 230 tonnes.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality at F_{MSY} (= 0.32), which implies catches of no more than 18 501 t. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 14 230 t. This is expected to lead to an SSB of 77 208 t in 2016.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and advice for 2015.

3.40 Anglerfish (*Lophius piscatorius* & *Lophius budegassa*)

3.40.1 Anglerfish (*Lophius piscatorius*) in Divisions VIIb–k and VIIIa,b,d

FISHERIES: The trawl fishery for anglerfish in the Celtic Sea and Bay of Biscay developed in the 1970s. Anglerfish are also taken as a by-catch in other demersal fisheries in the area. Landings have fluctuated over the last 20 years. Landings of *L. piscatorius* have declined steadily from 23 700 t in 1986 to 12 800 t in 1992, then increased to 22 100 t in 1996 and declined to 14 900 t in 2000. The landings have increased since then reaching the maximum of the time series in 2007 (29 000 t). Total catch in 2013 is unknown. Landings were 24.2 kt (76% otter trawl, 13% beam trawl, 8% gillnet, and 1% *Nephrops* trawl) and discards were known to take place but could not be quantified. The majority of anglerfish catches consists of immature fish. There are indications that discarding of small anglerfish has increased in recent years.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Lacking an analytical assessment the advice is based on survey data and catch information.

REFERENCE POINTS: There are no reference points defined for these stocks. As a consequence of recently identified problems with growth estimates, previous reference points are not considered to be valid.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation		Increasing

The biomass has increased. The average of the stock biomass indicator in the last two years (2012–2013) is 60% higher than the average of the three previous years (2009–2011). The abundance index suggests medium recruitment since 2008, with a decrease in 2013.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the data-limited approach but cannot quantify the resulting catches. The implied landings of *Lophius piscatorius* should be no more than 26 691 tonnes.

Management of the two anglerfish species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to the overexploitation of either species.

Other considerations

ICES approach to data-limited stocks

For this stock the biomass is estimated to have increased by more than 20% between the periods 2009–2011 (average of the three years) and 2012–2013 (average of the two years). Considering that a 20% increase in catch was advised last year, an additional 20% increase this year gives a risk that the catches increase faster than the biomass. ICES considers that last year's advice should be repeated. This corresponds to landings of *Lophius piscatorius* of no more than 26 691 tonnes. Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

This advice concerns *L. piscatorius* only. The sum of the ICES advice for the two species combined (*Lophius piscatorius* and *L. budegassa*) corresponds to no more than 37 450 tonnes in 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and that following the ICES approach to data limited stocks implies landings of L piscatorius of 26,691 t and combined landings of both L. piscatorius and L. budegassa of 37,450 t.

3.40.2 Anglerfish (*Lophius budegassa*) in Divisions VIIb–k and VIIIa,b,d

FISHERIES: The trawl fishery for anglerfish in the Celtic Sea and Bay of Biscay developed in the 1970s. Anglerfish are also taken as a by-catch in other demersal fisheries in the area. Landings of *L. budegassa* have fluctuated all over the studied period between 5 700 t to 9 600 t. Total catch in 2013 was unknown. Landings were 12.7 kt (89% otter trawl, 5% *Nephrops* trawl, 4% beam trawl, and 1% gillnet) and discards were known to take place but could not be quantified. The majority of anglerfish catches consists of immature fish. There are indications that discarding of small anglerfish has increased in recent years.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Lacking an analytical assessment the advice is based on survey data and catch information.

REFERENCE POINTS: There are no reference points defined for these stocks. As a consequence of recently identified problems with growth estimates, previous reference points are not considered to be valid.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})		Unknown

Precautionary approach (F_{pa},F_{lim})	?	Unknown

Stock size		
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

The biomass has been fluctuating, with generally higher values since 2007. The average of the stock biomass indicator in the last two years (2012–2013) is 33% higher than the average of the three previous years (2009–2011). Abundance is at the highest observed, with evidence of strong recruitment in 2011, 2012, and 2013.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the data-limited approach but cannot quantify the resulting catches. The implied landings should be no more than 10 757 tonnes.

Management of the two anglerfish species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to overexploitation of either species.

Other considerations

ICES approach to data-limited stocks

For this stock the biomass is estimated to have increased by more than 20% between the periods 2009–2011 (average of the three years) and 2012–2013 (average of the two years). Considering that a 20% increase in catch was advised last year, an additional 20% increase this year gives a risk that the catches increase faster than the biomass. ICES considers that last year's advice should be repeated. This corresponds to landings of *Lophius budegassa* of no more than 10 757 tonnes. Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

This advice concerns *L. budegassa* only. The sum of ICES advice for the two species (*Lophius budegassa* and *L. piscatorius*) combined corresponds to no more than 37 450 tonnes in 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and that following the ICES approach to data limited stocks implies landings of L. budegassa of 10,757 t and combined landings of both L. piscatorius and L. budegassa of 37,450 t.

3.41 Megrim (*Lepidorhombus whiffiagonis* and *Lepidorhombus boscii*) in Divisions VIIb–k and VIIIa,b,d.

Management measures for megrim in areas VIIb-k and VIIIabd are for *L. whiffiagonis and L. boscii* combined, although assessments and advice are for *L. whiffiagonis* only.

FISHERIES: Megrim to the west of Ireland and Britain and in the Bay of Biscay are caught predominantly by Spanish and French vessels, which together have reported more than 59% of the total international landings, and by Irish and UK demersal trawlers. Megrim is mostly taken in mixed fisheries for hake, anglerfish, *Nephrops*, cod, and whiting. Catches for this stock have been between 16 and 20 kt. Around 20-25% of the catches are discarded. Total catch in 2013 was 19.95

kt where 79% estimated landings (70% trawl approximately,30% not provided), partial 21% discards by weight.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Advice is based on a statistical catch at age model accepted for trends.

REFERENCE POINTS:

No reference points are defined for this stock. The previously defined reference points were based on previous assessment results, which are no longer valid. Due to the poor quality of the data ICES could not provide new reference points.

STOCK STATUS:

	Fishing pressure	
		2011-2013
MSY (F_{MSY})	?	Not available
Precautionary approach (F_{pa},F_{lim})	?	Not available
Qualitative evaluation	↘	Decreasing

	Stock size	
		2009-2013
MSY ($B_{trigger}$)	?	Not available
Precautionary approach (B_{pa},B_{lim})	?	Not available
Qualitative evaluation	↗	Increasing

Trends in SSB from the assessment, which includes surveys and commercial data, indicate an SSB increase of 13% in the last two years (2012–2013) relative to the three previous years (2009–2011). Fishing mortality in the last decade has decreased.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the approach for data-limited stocks, but cannot quantify the resulting catches. The implied landings should be no more than 15 180 tonnes.

Other considerations

ICES approach to data limited stocks

For data limited stocks for which a biomass index is available, ICES uses a harvest control rule based on an index-adjusted *status-quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the spawning stock biomass is estimated to have increased by 13% between 2009–2011(average of the three years) and 2012–2013 (average of the two years). This implies an increase of catches of at most 13% in relation to the average catches of the last three years. Because discard information is only partial, the advice calculation has been based on landings. Applying a 13% increase to recent landings average corresponds to landings of no more than 15 180 tonnes in 2015.

Considering that the effort in the main fisheries has decreased steadily leading to a decrease in fishing mortality, no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and that following the ICES approach to data limited stocks implies landings of *L. whiffiagonis* of 15,180 t for 2015. In the absence of any quantitative advice on an appropriate catch or landings limit for *L. boscii,* STECF has no basis on which to base advice for combined catches of *L. whiffiagonis* and *L. boscii*.

3.42 Plaice (*Pleuronectes platessa*) in Division VIIa (Irish Sea)

FISHERIES: In the eastern Irish Sea plaice are caught in the mixed demersal fishery, largely by UK otter trawlers, and as a bycatch in targeted sole beam trawl fisheries, dominated by Belgian trawlers. Total effort (hours fished) in the UK fleets targeting plaice have declined to the lowest levels recorded. Total effort by the Belgian beam trawl fleet has declined steadily from a peak in 2002. In the western Irish Sea, plaice are caught by the Irish and UK *Nephrops* fisheries: effort (in hours fished) by these fisheries is greater than in the mixed demersal and beam trawl fisheries combined. The regulations affecting plaice and other demersal stocks in Division VIIa remain linked to those implemented under the Irish Sea cod long-term management plan. Catches are predominantly taken by the UK, Belgium and Ireland, with smaller catches by France and at the end of the 1990s by The Netherlands. Landings were sustained between 2,900 t and 5,100 t from 1964-1986. Landings declined from the 1987 peak of 6,200 t to between 1,100-1,500 t from 1999-2005, well below the agreed TAC. Recently landings have continued to decline reaching the lowest ever level in 2010 379 t rebounding to 496 t in 2012. In 2012, 65% of catches were discarded. Catch in 2013 was 1049 t (32% landings, 68% discards). ICES estimates of landings were 309 t (52% beam trawl, 46% otter trawl, and 2% other gear types) while ICES estimates of discards were 740 t (46% beam trawl, 52% otter trawl, and 1% other gear types).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. An age-based Aarts and Poos (2009) model was accepted for trends. The assessment includes landings data for the full time-series and discards since 1994 and three surveys indices are used. The model continues to have difficulty in interpreting the data, although convergence properties have improved compared to last year's assessment. This year a review of the Aarts and Poos (2009) model discovered an error in the coding of the method. This was corrected and resulted in a rescaling of the estimated SSB, recruitment, and fishing mortality. The trends in each metric were unaffected and therefore the previous trend-based advice was appropriate.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✓	Below poss. reference points

	Stock size
	2012–2014

MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

The SSB trend has been stable since 2003. Fishery-independent estimates of plaice SSB from the annual egg production method (AEPM) surveys increased by 66% between 1995 and 2010. The recent fishing mortality is likely to be very low as the estimates of total catch (landings and discards) since 2006 are between 15% and 20% of the AEPM estimates of SSB over this period.

RECENT MANAGEMENT ADVICE:

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 1244 t in 2015. If discard rates do not change from the average of the last two years (2012–2013), this implies landings of no more than 394 t in 2015.

ICES advises that management measures to reduce discards in the mixed fishery are needed.

Other considerations

ICES approach to data limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as a harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated to have decreased by 7% between the periods 2009–2011 (average of the three years) and 2012–2013 (average of the two years). Considering the stable trend in SSB over the last decade and the large uncertainty in the annual estimates, this implies no changes in catches compared to the average of the last three years, corresponding to catches in 2015 of 1244 t. If discard rates do not change from the average of the last two years (68% in 2012–2013, a period that includes North Ireland discards), this implies landings in 2015 of no more than 394 t.

The recent harvest rate is considered to be very low, therefore no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. The value of 394 t landings advised by ICES represents a decrease of 15% on the average reported landings over the period 2011-2013 and a 67% reduction on the agreed TAC for 2014.

3.43 Plaice (*Pleuronectes platessa*) in the Celtic Sea (Divisions VIIf and g)

FISHERIES: The fishery for Celtic Sea plaice involves vessels from France, Belgium, England and Wales and Ireland. In the 1970s, the VIIfg plaice fishery was mainly carried out by Belgian beam trawlers and Belgian and UK otter trawlers. Effort in the UK and Belgian beam-trawl fleets increased in the late 1980s but has since declined. Recently, many otter trawlers have been replaced by beam trawlers, which target sole. Landings increased in the late eighties to its record high (2100t) and have declined since.

Currently the main fishery occurs in the spawning area off the north Cornish coast, at depths greater than 40 m, about 20 to 25 miles offshore. Although plaice are taken throughout the year, the larger landings occur during February–March after the peak of spawning, and again in September. Recent increases in fuel costs are thought to have restricted the range of some fleets and may have resulted

in a reduction in effort in Divisions VIIf,g. There is a high rate of discarding in both beam and otter trawl fisheries. Recent discard rates are very high, more than double the landings in 2011–2013.

Since 2000 the estimated landings have been below the TACs, and lowest catch levels of 386 t were recorded in 2005 and have remained around that level since then. Discards have fluctuated in that period between 500 and 1,300 t. Total catch in 2013 was 1674 t, where 409 t were estimated landings (47% beam trawl, 41% otter trawl, and 12% others) and 1265 t discards.

Since 2005, ICES rectangles 30E4, 31E4, and 32E3 have been closed during the first quarter (Council Regulations 27/2005, 51/2006, 41/2007 and 40/2008) with the intention of reducing fishing mortality on cod. The effects of the closure on plaice are not known although there have been spatial and temporal changes in the distribution of effort.

Plaice in the Bristol Channel and Celtic Sea (ICES Divisions VIIf and VIIg) is managed by TAC and technical measures. Technical measures in force for this stock are minimum mesh sizes, minimum landing size, and restricted areas for certain classes of vessels. Technical regulations regarding allowable mesh sizes for specific target species, and associated minimum landing sizes, came into force on 1 January 2000. The minimum landing size for plaice in Divisions VIIf,g is 27 cm.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Advice was provided on the basis of trends derived from the Aarts and Poos (2009) model fitted to catch and tuning series data. The Aarts and Poos (2009) model continues to have difficulty in interpreting the data, although convergence properties have improved compared to last year's assessment. Despite these concerns with the model, the SSB, recruitment, and fishing mortality trends from the model are still considered to be relevant.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
		1995–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	→	Stable over the time series

	Stock size	
		2008–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

Since 2004 the landings have been relatively stable but the discards have been increasing. The average of the stock size indicator (SSB from the Aarts and Poos (2009) assessment model) has increased gradually since 2004 and been stable since 2008. Fishing mortality is stable over the time-series. The increase in fishing mortality in the last two years is highly uncertain. Recruitment has fluctuated over the time-series and the 2013 recruitment is estimated to be low.

RECENT MANAGEMENT ADVICE:

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 1500 tonnes. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 420 tonnes.

ICES advises that management measures to reduce discards in the mixed fishery are needed.

Other considerations

ICES approach to data limited stocks

For data-limited stocks for which a biomass index is available, ICES uses as harvest control rule index-adjusted *status quo* landings. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised landings.

Considering the stable trend in SSB since 2008 and the large uncertainty in the annual estimates, this implies no changes in catches compared to the average of the last three years, corresponding to catches in 2015 of 1500 t. If discard rates do not change from the average of the last three years (72% in 2011–2013), this implies landings in 2015 of no more than 420 t.

Effort of the main fleets has been decreasing since 2000 and is currently at the recorded lowest level. Therefore, no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

3.44 Plaice (*Pleuronectes platessa*) in Divisions VIIe (Western English Channel)

FISHERIES: The fisheries taking plaice in the Western Channel mainly involve vessels from the bordering countries: the total landings (2008) are split among UK vessels (80%), France (12%), and Belgium (8%). Landings of plaice in the Western Channel were low and stable between 1950 and the mid-1970s, and increased rapidly during 1976 to 1988 as beam trawls began to replace otter trawls, although plaice are taken mainly as a by-catch in beam-trawling directed at sole and more recently anglerfish. Estimated landings have been fairly stable since 1994. Landings have continued to decrease in recent years to a similar low level as in the late-1970s. The main fishery is south and west of Start Point. Although plaice are taken throughout the year, the larger landings are made during February, March, October, and November. WKFLAT 2010 indicated that in addition to the landings in VIIe the stock suffers considerable fishing mortality in the first quarter in division VIId during their annual spawning migration. Landings from this stock (including a migration component caught in Division VIId) were 1,520 t in 2012. Total catch in 2013 was 1580 t, where 1350 t were estimated landings (55% beam trawl, 37% otter trawl, 5% fixed nets, and 2% other gear). In addition, 176 t landed from Division VIId are included in the assessment, reflecting the 15% 1st quarter migration correction (all Division VIId gears). Discards (2013) were 17% by weight. Discarding appears to be generally higher in quarters 1 and 2 in this fishery, but is low compared to other plaice stocks (about 20%).

The TAC for plaice in the English Channel is set for Divisions VIId,e combined.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based analytical assessment (XSA) using three commercial indices and two surveys data.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***

MSY Approach	MSY $B_{trigger}$	1650	Preliminary based on lowest SSB (in converged part of XSA) from which the stock has recovered.
	F_{MSY}	0.24	F_{max}2012. This value is stock specific.
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in: 2012)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

A large reduction of F occurred between 2007 and 2013, to just above the F_{MSY} proxy. SSB has increased since 2008 and is currently well above MSY $B_{trigger}$ as a result of the reduction in fishing mortality and the above-average recruitments in 2009–2011.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches of the Division VIIe plaice stock should be no more than 1885 t. If discard rates do not change from the average of the last two years (2012–2013), this implies landings of the Division VIIe plaice stock of no more than 1546 t.

Assuming the same proportion of the Division VIIe plaice stock is taken in Division VIId as during the period 2001–2012, this will correspond to catch of plaice in Division VIIe of no more than 1607 tonnes. If discard rates do not change from the average of the last two years (2012–2013), this implies landings of plaice in Division VIIe of no more than 1318 t.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.24 (= F_{MSY} proxy) which implies catches of Division VIIe plaice of no more than 1885 t. If discard rates do not change

from the average of the last two years (2012–2013), this implies landings of Division VIIe plaice of no more than 1546 t. This is expected to lead to an SSB of 5863 t in 2016.

Assuming that the proportion of the catches of the Division VIIe plaice stock taken in Division VIId remains the same as during the last decade (2001–2012), this will correspond to catches of plaice in Division VIIe of no more than 1607 tonnes. If discard rates do not change from the average of the last two years (2012–2013), this implies landings of plaice in Division VIIe of no more than 1318 t.

STECF COMMENTS: STECF agrees with the ICES assessment and advised landings for 2015.

STECF notes that the proposed proxy ($F_{max\ 2012}$) for F_{MSY}= 0.24 may not be appropriate. STECF considers that in general, $F_{0.1}$ is a more appropriate proxy for F_{MSY}. However, fishing at F=0.24 in the short term is predicted to maintain SSB well above MSY $B_{TRIGGER}$.

STECF notes that the assessment and advice is for plaice in ICES Division VIId but management is for plaice in ICES Divisions VIId and VIIe combined. The combined advice for plaice in VIId and VIIe is for landings in 2015 of no greater than 4 597 t, which represents a 13% decrease on the estimated average landings of plaice from these areas over the last 3 years and a 14% decrease compared to the agreed TAC for 2014 for VIId and VIIe.

3.45 Plaice (*Pleuronectes platessa*) in VIIhjk

FISHERIES: Plaice in Division VIIj are mainly caught by Irish vessels on sandy grounds off the southwest of Ireland. Plaice catches in Division VIIk are negligible. Catches in Division VIIj represent half of the total catches in the management area. Discard rates are high; in 2013 55% of the plaice (by number) caught in Divisions VIIjk were discarded (39% by weight). Total catch in 2013 was unknown, landings estimates (Divisions VIIh–k, 2013) were 182 t (70% otter trawl, 21% beam trawl, 9% other/unknown gear types). Discards in Division VIIh were unknown. Discards in Divisions VIIjk were in the order of 30% of the catch (average 2007–2013).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based analytical assessment (XSA) using one commercial index. The assessment is accepted for stock trends.

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✗	Above possible reference points

	Stock size	
		2005–2014
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

Spawning-stock biomass is low since 2005. The average of the stock size indicator (SSB from the exploratory assessment) in the last two years (2013–2014) is 6% lower than the average of the three previous years (2010–2012). Fishing mortality patterns are noisy but show no long-term trend; F remains well above potential reference points. Recruits at age 4 showed a decreasing trend until 2003 and have been stable since at a low level.

RECENT MANAGEMENT ADVICE:

New data and assessment available for this stock do not change the perception of the stock. Therefore, the advice for this stock in 2015 is the same as the advice for 2014: *Based on ICES approach to data-limited stocks, ICES advises that landings in 2014 should be no more than 135 t. Discards are known to take place but cannot be quantified; therefore total catches cannot be calculated.*

Plaice in Division VIIj are overexploited and heavily discarded. ICES advises that management measures to reduce discards in the mixed fishery are needed.

Other considerations

ICES approach to data limited stocks

For data-limited stocks for which biomass trends are available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the SSB is estimated to have decreased by 6% between the periods 2010–2012 (average of three years) and 2013–2014 (average of two years). Since the precautionary buffer was applied last year and the change in the stock size indicator is small, the same landings advice is still appropriate (landings of no more than 135 tonnes).

Discards are known to take place but cannot be fully qualified (in the order of 30% in Divisions VIIjk and unknown in Division VIIh). Therefore the total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

3.46 Plaice (*Pleuronectes platessa*) in Division VIIbc

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: Ireland is the major participant in this fishery with around 90% of the international landings over the period 1993-2006. Plaice are normally caught in mixed species otter trawl fisheries in Division VIIb. These vessels mainly target other demersal fish species and *Nephrops*. Official landings have declined from 251 t in 1996 to 18 t in 2013.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No assessment was carried out for this stock in 2012, 2013 and 2014.

REFERENCE POINTS: No reference points are defined for this stock.

STOCK STATUS:

F (Fishing Mortality)	
	2009-2011

Qualitative evaluation	? Insufficient information

SSB (Spawning Stock Biomass)	
	2009-2011
Qualitative evaluation	? Insufficient information

The stock status is unknown and the available catch statistics are not considered reliable indicators of abundance.

RECENT MANAGEMENT ADVICE:

New landings data available for this stock do not change the perception of the stock. New information indicates that there are discards of plaice that are unquantified. ICES advises based on the data-limited stocks approach, but cannot quantify the resulting catches. The implied landings should be no more than 30 tonnes.

Other considerations

ICES approach to data limited stocks

For data limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years average landings, corresponding to catches of no more than 30 t.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

The value of 30 t advised by ICES represents an increase of 38% on the average reported landings over the period 2011-2013 and a 59% decrease compared to the agreed TAC for 2014.

3.47 Sole (*Solea solea*) in Division VIIa (Irish Sea)

FISHERY: Sole are taken mainly in a beam trawl fishery that commenced in the 1960s and are also taken as a by-catch in the long established otter trawl fisheries. Effort in the Belgian beam trawl fleet increased in the late 1980s as vessels normally operating in the North Sea were attracted into the Irish Sea by better fishing opportunities. In recent years, however, catch rates of sole have been low in the Irish Sea, and part of the beam trawl fleet has moved to other sole fishing grounds. Over the last 30 years, the total landings have been in the order of 1,000 t to 2,000 t. Landings have declined sharply since 2007 to around 300 t. Total catch in 2013 was 157 t where estimated landings were 148 t (87% beam trawlers, 12% otter trawlers, and < 1% other gears) and discards were 9 t (6% by weight).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an age-based analytical assessment (XSA), which uses commercial landings data and a scientific survey.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY	3100 t	Default to value of B_{pa}

Approach	$B_{trigger}$		
	F_{MSY}	0.16	Provisional proxy based on stochastic simulations assuming a Ricker S/R relationship (range 0.1–0.25)
Precautionary Approach	B_{lim}	2200 t	$B_{lim} = B_{loss}$. The lowest observed spawning stock, followed by an increase in SSB.
	B_{pa}	3100 t	$B_{pa} \sim B_{lim} * 1.4$. The minimum SSB required ensuring a high probability of maintaining SSB above its lowest observed value, taking into account the uncertainty of assessments.
	F_{lim}	0.40	$F_{lim} = F_{loss.}$ Although poorly defined, there is evidence that fishing mortality in excess of 0.4 has led to a general stock decline and is only sustainable during periods of above-average recruitment.
	F_{pa}	0.30	This F is considered to have a high probability of avoiding F_{lim}.

(Last changed in: 2010)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Just above target
Precautionary approach (F_{pa},F_{lim})	o	o	✓	Harvested sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity

SSB has continuously declined in the period 2001 to 2009 and has been below B_{lim} since 2005. The fishing mortality has shown a declining trend since the late 1980s and dropped from around F_{pa} to just above F_{MSY} in 2013. Recent recruitments have been lower than earlier in the time-series, with the 2011 recruitment being the lowest.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the precautionary approach that there should be no directed fisheries and that bycatch and discards should be minimized.

Other considerations

MSY/precautionary approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.07 (lower than F_{MSY} because SSB in 2015 is 56% below MSY $B_{trigger}$). The implied catches should be no more than 95 t. If discard rates do not change from the average of the last three years (2011–2013), this

implies landings of no more than 90 t. This is expected to lead to a SSB of 1582 t in 2016, which is below B_{lim}.

However, considering the low SSB and low recruitment since 2000, it is not possible to identify any non-zero catch which would be compatible with the MSY/precautionary approach.

Management considerations

At the end of 2013 additional quota regulations were imposed by the Flemish government for the Belgian sole fishery in the Irish Sea. After a national closure of the Irish Sea in January 2014, the fleet is allocated a bycatch quota for sole of 1000 kg in the Irish Sea, from February until the end of August 2014. Four beam trawl vessels that participated in a scientific survey in 2013 were allocated a scientific quota of 4000 kg in the same period, provided an observer is present during the fishing trips. Mid-May about 30% of the Belgian sole quota had been taken. Because of this it is expected that landings in 2014 will be in line with the agreed TAC of 95 t.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that there should be no directed fisheries and that bycatch and discards should be minimized in 2015. STECF advises that this should be interpreted to mean that in 2015, catches of sole from Division VIIa should be reduced to the lowest possible level.

3.48 Sole (*Solea solea*) in Divisions VIIf,g (Celtic Sea)

FISHERIES: The sole fishery is concentrated on the north Cornish coast off Trevose Head and around Lands End. Reported landings have generally declined since the mid 1980s, up to 1998. Since then they increased to around 1,300 t in the early 2000's. Total catch in 2013 was unknown, estimated landings were 1096 t (86% beam trawlers, 11% otter trawlers, and 3% other gear). Discards were considered negligible.

Sole are taken mainly in a beam trawl fishery that started in the early 1960s and, to a lesser extent, in the longer established otter trawl fisheries. In the beam trawl fishery sole is mainly taken as part of a mixed demersal fishery with plaice and, to a lesser extent, cod.

In the 1970s, the fishery was mainly carried out by Belgian beam trawlers and Belgian and UK otter trawlers. The use of beam trawls (to target sole and plaice) increased during the mid-1970s, and the Belgian otter trawlers have now been almost entirely replaced by beam trawlers. Effort in the Belgium beam trawl fleet increased in the late 1980s as vessels normally operating in the North Sea were attracted to the west by improved fishing opportunities. Beam trawling by UK vessels increased substantially from 1986, reaching a peak in 1990 and decreasing thereafter. In the Celtic Sea, the beam and otter trawl fleets also take other demersal species such as plaice, cod, rays, brill, turbot, and anglerfish.

The Celtic Sea is an area without days-at-sea limitations for demersal fisheries. In the past this has resulted in increased effort in the Celtic Sea as a direct result of restrictive effort in other areas. This was particularly the case in 2004–2005 when effort in the sole fishery increased because of restrictive days at sea in the eastern channel (Division VIId).

Since 2005, ICES rectangles 30E4, 31E4, and 32E3 have been closed during the first quarter (Council Regulations 27/2005, 51/2006, 41/2007 and 40/2008) with the intention of reducing fishing mortality on cod. The effects of the closure on sole are not known although there have been spatial and temporal changes in the distribution of effort.

SOURCE OF MANAGEMENT ADVICE: The advice is based on an analytical age-based assessment (XSA) using landings, three commercial cpue series, and one survey index.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{trigger}$	2200 t	Bpa
	F_{MSY}	0.31	Provisional proxy based on stochastic simulations
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	2200 t	There is no evidence of reduced recruitment at the lowest biomass observed and B_{pa} can therefore be set equal to the lowest observed SSB.
	F_{lim}	0.52	F_{lim}: F_{loss}.
	F_{pa}	0.37	This F is considered to have a high probability of avoiding F_{lim} and maintaining SSB above B_{pa} in 10 years, taking into account the uncertainty of assessments. F_{pa}: F_{lim} × 0.72 implies a less than 5% probability that (SSB_{MT}< B_{pa}).

(Last changed in: 2010)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	o	✗	Harvest unsustainable

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning-stock biomass has been above MSY $B_{trigger}$ since 2001, but is declining. Since 2010, fishing mortality has been increasing and is now at F_{lim}. Recruitment has been fluctuating around average.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 652 t. All catches are assumed to be landed.

Other considerations

MSY approach

Following the ICES MSY approach implies that fishing mortality is reduced to 0.31. The implied catches should be no more than 652 t. Discards are considered negligible. This is expected to lead to an SSB of 2352 t in 2016.

Precautionary approach

The fishing mortality in 2015 should be no more than F_{pa}. The implied catches should be no more than 760 t. This is expected to keep SSB above B_{pa} in 2016. Discards are considered negligible.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

3.49 Sole (*Solea solea*) in Division VIIe (Western English Channel).

FISHERIES: Sole are widespread and usually taken in conjunction with other species to varying degrees, dependent on location and season. The most productive sole fishery grounds are located close to ports, while the highest catches of anglerfish for example are taken further south and west in Division VIIe.

The principal gears used are otter-trawls and beam-trawls, and sole tends to be the target species of an offshore beam-trawl fleet, which is concentrated off the south Cornish coast and also catches plaice and anglerfish. The total landings have been stable over 1991-1999 and amounts to around 900 t. Since 2000, landings have been around 1,000 until 2009 since when due to the introduction (in late 2008) of a single area licensing scheme compliance improved dramatically and landings dropped to around 700 t. Since then landings have been increasing in line with the management plan described landings. Discarding is estimated to be low in this fishery although the use of experimental gears in the fishery may alter this perception in the future. Landings in 2012 amount to 871 t. Total catch in 2013 was 882 t, where 882 tonnes were estimated landings (51% beam trawl, 27% otter trawl, 12% gillnets, and 10% other gear-types) and discards are considered negligible.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Age-based analytical assessment (XSA) based on landings, three surveys and three commercial CPUE data.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	2800 t	Based on the lower 95% confidence limits with exploitation at F=0.27 from LT simulations.
Approach	F_{MSY}	0.27	Based on stochastic LT simulations.
Precautionary approach	B_{lim}	1300 t	WKFRAME 2 meta-analysis (ICES, 2011).
	B_{pa}	1800 t	WKFRAME 2 meta-analysis (ICES, 2011).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in: 2012).

STOCK STATUS:

Fishing pressure

	2011	2012	2013	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	2014	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The fishing mortality has fluctuated around F_{MSY} since the early 1990s and is estimated to have been below F_{MSY} since 2009. SSB has been around MSY $B_{trigger}$ for about two decades, increased from 2009 to 2012, and has declined thereafter as a result of weaker recruitment. Recruitment has been fluctuating without an overall trend, but the 2010 to 2012 year classes are estimated to be below average.

MANAGEMENT AGREEMENT: A management plan has been agreed by the EU in 2007 (Council Regulation (EC) No. 509/2007). Following the recovery of the stock in 2011 the plan has moved into the management plan phase where it aims to keep F at the target value of 0.27. This plan has not been evaluated by ICES.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 851 tonnes. All catches are assumed to be landed.

Other considerations

MSY approach

Following the ICES MSY approach implies a fishing mortality at F_{MSY} = 0.27, which implies catches of no more than 851 t in 2015. All catches are assumed to be landed. This is expected to lead to an SSB of 2798 t in 2016, which is just at $B_{trigger}$.

Management plan

Council Regulation (EC) No. 509/2007 establishes a multi-annual plan for the sustainable exploitation of sole in Division VIIe. The years 2007–2009 were deemed a recovery plan, with subsequent years being deemed a management plan.

Following the agreed EC management plan implies an F of 0.27 in 2015 (F_{MP}, the management plan long-term target), which implies catches of no more than 851 t. All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and with the ICES advice for 2015.

3.50 Other Demersal elasmobranches in the Celtic Seas and West of Scotland

Advice from ICES for Angel sharks (*Squatina squatina*) and Smooth Hounds (*Mustellus spp*) is provided at the NE Atlantic regional level and is given in Sections 8.19 and 8.20 of this report.

3.51 Herring (*Clupea harengus*) in the Irish Sea (Division VIIa North)

FISHERIES: This herring stock is mainly exploited by the UK with Ireland taking a small proportion of the catches in some years. Since 1987 the landings have fluctuated between about 2,000 t and 10,000 t. From 2002 to 2010 the TAC had been 4,800 t but it has since increased to 5,200 t. Landings in 2013 were 4,828 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. This year an analytical assessment (FLSAM) and short term forecast are presented for this stock.

REFERENCE POINTS:

	Type	Value	Technical basis
MSY	MSY $B_{trigger}$	9500 t	Provisional based on B_{pa}
Approach	F_{MSY}	0.26	Based on stochastic simulations (ICES, 2012a)
Precautionary approach	B_{lim}	6000 t	Lowest observed SSB.
	B_{pa}	9500 t	$B_{pa} = B_{lim} * 1.58$
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in: 2012)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning-stock biomass has been above MSY $B_{trigger}$ since 2006. Fishing mortality has decreased since 2003 to the lowest in the time-series and is now around F_{MSY}. Recruitment is relatively high and stable; estimated above the average of the time-series since 2006 (2004 year class).

Management plans

No specific management objectives are known to ICES. A management plan is currently under review by the Pelagic RAC for Division VIIa (North).

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 4854 tonnes. ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring, such as extraction of marine aggregates and marine construction on the spawning grounds, should not occur.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality at F_{MSY} = 0.26, resulting in catches of no more than 4854t in 2015. This is expected to lead to an SSB of 15 199 t in 2016.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should be no more than 4,854t.

3.52 Herring (*Clupea harengus*) in Divisions VIIa (South of 52°30'N) and VIIg,h,j,k (Celtic Sea and South of Ireland)

FISHERIES: France, Germany, Ireland, Netherlands and UK have participated in the herring fisheries in this area. However in recent years the fishery has mainly been exploited by Irish vessels and Ireland has been allocated nearly 90% of the overall quota. Until the late 1990s, landings fluctuated between about 19,000 and 23,600 t. From 1998 to 2009, landings decreased from 20,300t to around 5,800t. Since then catches have increased to a peak of 21,700 in 2012. In 2013 catches decreased to almost 16,247t.

The main fishery is by pelagic trawlers in coastal spawning grounds, and offshore feeding grounds south of Ireland. There has been considerable efficiency creep in the fishery since the 1980s with a greater ability to locate fish. Under the current management regime the quality of the catch data has improved. Discarding is currently negligible. There were concerns of an increased risk of discarding. However, changes to quota management have reduced this risk with the flexibility incorporated into the weekly quota system whereby a vessel could use some of the following week's quota to avoid slippage. In this area sprat landings have increased substantially and it is sometimes difficult to differentiate sprat and herring in landings statistics. There is also a concern that sprat in this area may be fished together with bycatches of juvenile herring.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The stock was benchmarked in 2014 and the current assessment is based on an age-based analytical assessment (SAM).

REFERENCE POINTS:

	Type	Value	Technical basis
MSY approach	MSY $B_{trigger}$	61 000 t.	Stochastic simulations on segmented regression stock–recruitment relationship (ICES, 2014b).
	F_{MSY}	0.37	Stochastic simulations on segmented regression stock–recruitment relationship (ICES, 2014b). Value subject to review in 2015.
Management plan	SSB_{MGT}	61 000 t.	Stochastic simulations on segmented regression stock recruit relationship (ICES, 2014b).
	F_{MGT}	0.23	Stochastic simulations on segmented regression stock recruit relationship (ICES, 2014b).
Precautionary approach	B_{lim}	23 000 t.	Stochastic simulations on segmented regression stock recruit relationship (ICES, 2014b).
	B_{pa}	41 000 t.	Low probability of low recruitment.
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Changed in 2014)

STOCK STATUS:

	Fishing pressure			
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa}, F_{lim})	?	?	?	Undefined
Stock size				

	2011	2012	2013	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa}, B_{lim})	✓	✓	✓	Full reproductive capacity

The SSB is above the MSY $B_{trigger}$ and above B_{pa}. F is below F_{MSY} but has increased since 2009. There are a series of strong year classes in the fishery.

MANAGEMENT AGREEMENT:

Long-term management plan for herring in the Celtic Sea and Division VIIj, as agreed by the Pelagic RAC

1. *Every effort shall be made to maintain a minimum level of Spawning Stock Biomass (SSB) greater than 41,000 t, the level below which recruitment becomes impaired.*
2. *Where the SSB, in the year for which the TAC is to be fixed, is estimated to be above 61,000 t ($B_{trigger}$) the TAC will be set consistent with a fishing morality, for appropriate age groups, of 0.23 (F_{target}).*
3. *Where the SSB is estimated to be below 61,000 tonnes, the TAC will be set consistent with a fishing mortality of:*

   *SSB * 0.23 / 61,000*
4. *Where the rules in paragraphs 2 and 3 would lead to a TAC which deviates by more than 30 % from the TAC of the preceding year, the TAC will be fixed such that it is not more than 30 % greater or 30 % less than the TAC of the preceding year.*
5. *Where the SSB is estimated to be below 41,000 tonnes, Subdivision VIIaS will be closed until the SSB has recovered to above 41,000 tonnes.*
6. *Where the SSB is estimated to be below 41,000 tonnes, and Sub-Division VIIaS is closed, a small-scale sentinel fishery will be permitted in the closed area. This fishery will be confined to vessels, of no more than 50 feet in registered length. A maximum catch limitation of 8% of the Irish quota will be exclusively allocated to this sentinel fishery.*
7. *Notwithstanding paragraphs 2, 3 and 4, if the SSB is estimated to be at or below the level consistent with recruitment impairment (41,000 t), then the TAC will be set at a lower level than that provided for in those paragraphs.*
8. *No vessels participating in the fishery, if requested, will refuse to take on-board any observer for the purposes of improving the knowledge on the state of the stock. All vessels will, upon request, provide samples of catches for scientific analyses.*
9. *Every three years from the date of entry into force of this Regulation, the Commission will request ICES and STECF to review and evaluate the plan.*
10. *This arrangement enters into force on 1st January, 2012.*

In 2012 ICES evaluated this plan and found it to be in accordance with the precautionary approach.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 15 140 tonnes in 2015. ICES advises, under precautionary considerations, that activities that have a negative impact on the spawning habitat of herring, such as extraction of marine aggregates and marine construction on the spawning grounds, should not occur.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality at 0.36 (less than F_{MSY} because SSB_{2014} is below MSY $B_{trigger}$), which is higher than the current F (0.31), resulting in catches of less than 15 140 t in 2015. This is expected to lead to an SSB of 54 108 t in 2015. The ICES MSY HCR has been applied based on SSB_{2014} instead of SSB_{2015} because SSB_{2014} is computed at spawning time (i.e. in the autumn).

Management plan

In 2011 the Pelagic RAC agreed a new proposed long-term management plan (Annex 5.3.15). This plan has a target F of 0.23 and a 30% constraint on TAC change. This TAC contraint prevents sudden changes of the TAC and accounts for uncertainties in the assessment and forecast in the event of strong or low incoming recruitment. This plan would lead to a TAC in 2015 of 15 652 t. In 2012 ICES evaluated this plan and found it to be in accordance with the precautionary approach. It leads to sustainable yield and provides stability in catches over time, at the expense of maximizing yield.

Precautionary approach

The SSB is well above B_{pa}. F_{pa} is undefined, but current F is well below F_{MSY}.

Management considerations

The long-term management plan, proposed by the Pelagic RAC, has been endorsed by ICES and implemented for setting the 2013 TAC by the Council European Union. The proposed target F is 0.23 and the trigger biomass point is 61 000 t. The European Commission used the management plan to set its TAC proposal for 2013 and 2014. Even though the plan has the support of the European Commission for TAC setting and has been evaluated by ICES and found to be precautionary, it should be noted that the plan will not enter into law until it has been endorsed by all three European institutions, including the Parliament.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and on the basis of the ICES MSY approach that catches should be no more than 15 140 tonnes in 2015.

STECF notes that the provisions of the proposed long term management plan for Celtic Sea herring would imply catches of 15,652t for 2015.

STECF notes that the F_{MSY} (0.37) for this stock is high compared to other herring stocks and will be reviewed in 2015.

3.53 Herring (*Clupea harengus*) in Division VIIe,f

STECF did not have access to any new information on Herring in Divisions VIIe,f and ICES has not undertaken any assessments or issued any recent advice. The text below remains unchanged from the STECF Consolidated Review Advice for 2014.

FISHERIES: This stock is exploited by the UK and France. The TAC for this stock has been set at 1,000 t and has remained unchanged in recent years. This TAC is divided equally between the UK and France. Landings between 2006 and 2011 have fluctuated from 600t to 1000t. In 2012 total landings were 553t and in 2013 were 411t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No analytical assessment has been made in recent years.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)			
	2007	2008	**2009**
MSY (F_{msy})	?	?	?
Precautionary approach (F_{pa},F_{lim})	?	?	?

The available information is inadequate to evaluate stock trends, and the state of the stock is uncertain.

RECENT MANAGEMENT ADVICE: No management advice is provided for this stock.

STECF COMMENTS: STECF agrees with the ICES advice.

3.54 Sprat (*Sprattus sprattus*) in Divisions VIId,e.

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Only the UK carries out a sprat fishery in this area. For the last 20 years the annual landings have been in the order of 1,200 to 5,400 t. Landings have decreased since 1999. Landings in 2004 were the lowest in the time series, at about 800 t. Slight increases in landings were seen in 2005 and 2006 with about 1,600t and 2,000t reported respectively. Landings in 2008 and 2009 were around 3,400t and 2,800t respectively, rising to 4,400t in 2012. In 2013 landings were 3,793t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on the ICES approach to data limited stocks.

REFERENCE POINTS: No reference points are defined.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2008–2012	
Qualitative evaluation	↗	Increasing

The average lpue of mid-water trawl is considered a stock size indicator (kg hour^{-1}). In the last two years (2011–2012) it has been 137% higher than the average of the three previous years (2008–2010).

RECENT MANAGEMENT ADVICE:

New landings per unit effort (lpue) data available do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *ICES advises on the basis of the data-limited approach that catches should be no more than 3 832 tonnes.*

MANAGEMENT PLANS

No specific management objectives are known to ICES.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should be no more than 3,832t.

4 RESOURCES OF THE BAY OF BISCAY AND IBERIAN WATERS

4.1 Norway lobster *(Nephrops norvegicus*) in Southwestern waters

For all *Nephrops* Functional Units in Southwestern waters (ICES sub-areas VIII, IX and X) ICES has provided biennial advice in 2014 which is valid for both 2015 and 2016. The advice sheets provided by ICES this year, are all based on the ICES approach for data-limited stocks. Assessment/evaluation of stock status is therefore mainly based on updated landings and lpue figures. These Nephrops FUs are assessed by the ICES Working Group for the Bay of Biscay and the Iberian Waters Ecoregion (WGBIE).

Norway lobster in Sub-area VIII, contains 4 Functional Units:

- Divisions VIIIa, b: Bay of Biscay North and south (FU 23 & FU 24)
- Divisions VIIIc: North Galicia (FU 25) and Cantabrian Sea (FU 31)

Of the these 4 FUs *Nephrops* in Bay of Biscay (FUs 23 and 24) in Div. VIIIa,b is the major contributor to *Nephrops* landings from this area. All the fisheries in VIII taking *Nephrops* are mixed fisheries, in which a single target species often may be difficult to identify. A major fin-fish component is hake. None of these 4 FUs are assessed by UWTV surveys. The FUs 23 and 24 have been subject to analytical assessments (length based cohort analysis) but the results were considered indicative only and not used for catch projections. At present the assessment is based on survey indices, which also are indicative only and these stocks are now classified as 'data limited'. The two other FUs (in Div. VIIIc) are also data-poor stocks with negligible landings and no analytical assessments are provided.

Norway lobster in Divisions Sub-area IX, contains 5 Functional Units::

FU no.	Name	ICES Div	Statistical rectangles
26	West Galicia	IXa	13-14 E0-E1
27	North Portugal (N of Cape Espichel)	IXa	6-12E0; 9-12E1
28	South-West Portugal (Alentejo)	IXa	3-5 E0-E1
29	South Portugal (Algarve)	IXa	2E0-E2
30	Gulf of Cadiz	IXa	2-3 E2-E3

Nephrops represents a small, but valuable by-catch in these fisheries targeting mainly demersal fish species. In the Southwest and South SW and S Portugal there is a crustacean trawl fishery, targeting mainly deepwater crustaceans. The fishery in West Galicia, North Portugal and Gulf of Cádiz is mainly conducted by Spanish vessels, and that in Southwest and South Portugal by Portuguese vessels, on deep water grounds (200-750 m). The Portuguese fleet comprises two components: demersal fish trawlers and crustacean trawlers. Total landings from Div. IXa (FUs 26-30) have decreased dramatically during the last 30 years. In 1980 total t landings exceeded 2000 t, while they were 273 t in 2011, of which 150 t were taken from FUs 28 - 29. 2012 saw a slight increase in total landings to 353 t. All these stocks are classified as being 'data limited'

4.1.1 Norway lobster (*Nephrops norvegicus*) in FU 23 & FU 24, Bay of Biscay (Divisions VIIIa, b)

FISHERIES: There are two Functional Units in these divisions VIIIa & VIIIb: a) Bay of Biscay North (FU 23) and b) Bay of Biscay South (FU 24), together called Bay of Biscay. Nearly all landings are taken by French trawlers. Until 2011 landings have fluctuated between 3,500 and 6,000

t , but since then landings have decreased. In 2013 total landings amounted to 2380 t. The discard rate is usually high and the estimated discards for 2013 were 1520 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on biomass index from one survey, used as an indicator of stock size. The uncertainty associated with the index values is not available.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
		2011–2013
MSY (F_{MSY})	?	Undefined
Precautionary approach (F_{pa},F_{lim})	?	Undefined
Qualitative evaluation	↘	Decreasing

SSB (Spawning-Stock Biomass)		
		2009–2013
MSY ($B_{trigger}$)	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	Undefined
Qualitative evaluation	↗	Stable / Increasing

The biomass index from 2006–2013 shows no clear trend; the average of the last two years over the previous three years shows a 14% increase.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings (in 2015 and 2016) should be no more than 3214 tonnes, assuming that discard rates do not change from the average of the last three years (2011–2013), and a fixed proportion (30%) of discards survive. This corresponds to removals of no more than 4224 tonnes.

Other considerations

No reliable forecast can be presented for this stock, because the assessment is only indicative of trends and the absolute level of stock size is uncertain.

ICES approach to data-limited stocks

For data-limited stocks for which a biomass index is available, ICES uses a harvest control based on an index-adjusted status quo catch. The advice is based on a comparison of the two most recent biomass index values with the three preceding values, combined with recent removals data. Knowledge about the exploitation status also influences the advised catch.

This stock biomass is estimated to have increased by 14% between the periods 2009–2011 (average of the three years) and 2012–2013 (average of the two years). This implies an increase of catches of at most 14% in relation to the last three years' catches, corresponding to landings of no more 3214 tonnes. Assuming that discard rates do not change from the average of the last three years (2011–2013) and that the discard survival rate is 30%, removals would be no more than 4224 tonnes.

Considering that the effort over the time period (2006–2013) has reduced by 27%, no additional precautionary reduction is needed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

STECF considers that management of fishing mortality on *Nephrops* stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

4.1.2 Norway lobster (*Nephrops norvegicus*) in Division VIIIc (FU 25)

FISHERIES: FU 25 now covers part of Bay of Biscay and Western Iberian Seas. All catches from this FUs are taken by Spain. *Nephrops* constitutes a small component of mixed fishery landings taken by bottom trawlers. Nephrops are caught in the mixed bottom trawl fishery. The fishery takes place throughout the year, with the highest landings in spring and summer. Nephrops are taken together with hake, anglerfish, megrim, horse mackerel, mackerel, and blue whiting. Due to the mixed nature of the demersal fisheries in this area, management measures for finfish species influence the exploitation of Nephrops. Landings and effort in both functional units have declined and landings are now at extremely low levels compared to earlier years (10 t in 2013 compared to landings of about 500 t in the early 1990s).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No assessment has been carried out in recent years.

MANAGEMENT AGREEMENT: A recovery plan for Southern hake and Iberian *Nephrops* has been agreed by the EC in 2006 (Council Regulation (EC) 2166/2005). The aim of the recovery plan is to rebuild the stocks within 10 years, with a reduction of 10% in F relative to the previous year and the TAC set accordingly. The calculation of a TAC corresponding to a reduction in F of 10% as called for in the recovery plan was not feasible because short-term forecasts are not available.

REFERENCE POINTS: No precautionary reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below possible reference points

All information indicates that the stock is at a very low abundance level. Landings and the lpue have declined continuously and are currently very low.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary considerations that there should be no directed fishery and that bycatch should be minimized. To

protect the stock in this functional unit, management should be implemented at the functional unit level.

Other considerations

The advice is based on an abundance index from one commercial index used as an indicator of stock size. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. The harvest control rules are expected to stabilize stock size in the short term (3–5 years), but they may not be suitable if the stock size is low and/or overfished.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016

STECF considers that management of fishing mortality on Nephrops stocks would best be achieved if measures, including catch restrictions, were implemented at the level of the functional unit.

STECF considers that management should be at the functional unit rather than ICES division level in order to ensure that catch opportunities and effort are in line with the scale of the resources in each of the stocks defined by functional units.

STECF notes that an agreed management plan for *Nephrops* in Division VIIIc (Council Regulation (EC) 2166/2005) has been in effect since 2006. However, seemingly without any measurable effect on the *Nephrops stock.*

4.1.3 Norway lobster (*Nephrops norvegicus*) in VIIIc, the Cantabrian Sea (FU 31).

FISHERIES: Nephrops are caught in the mixed bottom trawl fishery. The fishery takes place throughout the year, with the highest landings in spring and summer. Nephrops are taken together with hake, anglerfish, megrim, horse mackerel, mackerel, and blue whiting. Due to the mixed nature of the demersal fisheries in this area, management measures for finfish species influence the exploitation of Nephrops. Discarding of Nephrops in this fishery is minimal, based on observer information. Landings and effort have declined and landings are now at extremely low levels compared to earlier years from around 100 t in the 1990s to 10 t in 2013.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No assessment has been carried out in recent years.

MANAGEMENT AGREEMENT: A recovery plan for Southern hake and Iberian Nephrops has been agreed by the EC in 2006 (Council Regulation (EC) 2166/2005). The aim of the recovery plan is to rebuild the stocks within 10 years, with a reduction of 10% in F relative to the previous year and the TAC set accordingly. The calculation of a TAC corresponding to a reduction in F of 10% as called for in the recovery plan was not feasible because short-term forecasts are not available. ICES has not evaluated this recovery plan.

REFERENCE POINTS: No precautionary reference points are defined for this stock.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below possible reference points

All information indicates that the stock is at a very low abundance level. Landings and the lpue have declined continuously and are currently very low.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary considerations, that there should be no directed fishery and bycatch should be minimized.

STECF COMMENTS: STECF agrees with the advice from ICES.

4.1.4 Norway lobster (*Nephrops norvegicus*) in IXa, West Galicia (FU 26) and North Portugal (FU 27):

FISHERIES: Nephrops are caught in the mixed bottom-trawl fishery. The fishery takes place throughout the year, with the highest landings in spring and summer. Nephrops are taken together with hake, anglerfish, megrim, horse mackerel, mackerel, and blue whiting. Due to the mixed nature of the demersal fisheries in this area, management measures for finfish species influence the exploitation of Nephrops. Discarding of Nephrops in this fishery is negligible, based on observer information. Total landings from FUs 26 and 27 decreased from a high of around 800 t in 1981 to around 3 in recent years.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Biennial advice (for 2013 and 2014) for these FUs was provided in. These stocks are classified as data limited.

REFERENCE POINTS: No reference points have been defined for these FUs (stocks).

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below possible reference points

All information indicates that the stock is at a very low abundance level. Landings and lpue have fluctuated along a marked downward trend and are currently very low. Mean sizes have shown an increasing trend over the time-series, which may reflect poor recruitment

MANAGEMENT AGREEMENT: A recovery plan for Southern hake and Iberian Nephrops has been agreed by the EC in 2006 (Council Regulation (EC) 2166/2005). The aim of the recovery plan is to rebuild the stocks within 10 years, with a reduction of 10% in F relative to the previous year and the TAC set accordingly. The calculation of a TAC corresponding to a reduction in F of 10% as called for in the recovery plan was not feasible because short-term forecasts are not available.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary considerations that there should be no directed fishery and by-catch should be minimized.

To protect the stock in these functional units, ICES advises that management should be implemented at the functional unit level.

STECF COMMENTS: STECF agrees with the advice from ICES.

4.1.5 Norway lobster (*Nephrops norvegicus*) in IXa, SW and S Portugal (FU 28 & FU 29):

FISHERIES: The crustacean fleet targets two main species, rose shrimp and Norway lobster. Rose shrimp has a high market value and the fishing grounds are shallower. In periods of high abundance of rose shrimp, the vessels reduce the fishing pressure on *Nephrops* and redirect the effort to the rose shrimp, getting higher revenue with low costs. Besides the bottom trawl, a low percentage of catches is taken by a polyvalent fleet, fishing with traps. In the 1990s total annual landings were 400-500 t, but in recent years landings have been around 200 t. Most of the landings are by Portuguese vessels.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Biennial advice (for 2013 and 2014) for these FUs was provided in. These stocks are classified as data limited.

REFERENCE POINTS: No reference points have been defined for these FUs (stocks).

STOCK STATUS:

Fishing pressure		
	2008–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	→	Stable at low level

Stock size		
	1998-2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

The standardized effort in the last five years is half of that estimated prior to 2005. The cpue series suggests that there has been no substantial change in the biomass over the time period.

MANAGEMENT AGREEMENT: A recovery plan for Southern hake and Iberian Nephrops has been agreed by the EC in 2006 (Council Regulation (EC) 2166/2005). The aim of the recovery plan is to rebuild the stocks within 10 years, with a reduction of 10% in F relative to the previous year and the TAC set accordingly. The calculation of a TAC corresponding to a reduction in F of 10% as called for in the recovery plan was not feasible because short-term forecasts are not available.

RECENT MANAGEMENT ADVICE: Based on ICES approach to data-limited stocks, ICES advises that catches in 2015 and 2016 should be no more than 226 tonnes. All catches are assumed to be landed.

To protect the stock in these functional units, ICES advises that management should be implemented at the functional unit level.

STECF COMMENTS: STECF agrees with the advice from ICES.

4.1.6 Norway lobster (*Nephrops norvegicus*) in IXa, Gulf of Cadiz (FU 30):

FISHERIES: Nephrops in FU 30 are mostly exploited by Spanish trawlers. The bottom trawl fleet of the Gulf of Cadiz is characterized by the diversity of its landings, with a mixture of target species (fishes, cephalopods, and crustaceans). Nephrops landings are clearly seasonal with high values from April to September. Discarding of Nephrops is negligible in these fisheries. From 2000-2010 landings varied between 100 – 300 t. In 2013 catches were low because of TAC constraints to the fishery.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. Biennial advice (for 2015 and 2016) for these FUs is provided. The stock is classified as data limited.

REFERENCE POINTS: No reference points have been defined for these FUs (stocks).

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	↘	Declining

	Stock size	
	2009–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

Over the time-series the abundance indices have declined, but recent data indicate that there may be some recovery in the stock. The average of the stock size indicator (lpue) in the last two years (2012–2013) is 42% higher than the average of the three previous years (2009–2011). The effort since 2008 is half that observed in 2002–2007.

MANAGEMENT AGREEMENT: A recovery plan for Southern hake and Iberian Nephrops has been agreed by the EC in 2006 (Council Regulation (EC) 2166/2005). The aim of the recovery plan

is to rebuild the stocks within 10 years, with a reduction of 10% in F relative to the previous year and the TAC set accordingly. The calculation of a TAC corresponding to a reduction in F of 10% as called for in the recovery plan was not feasible because short-term forecasts are not available.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the data-limited approach that catches should be no more than 95 tonnes. All catches are assumed to be landed.

To protect the stock in these functional units, ICES advises that management should be implemented at the functional unit level.

STECF COMMENTS: STECF agrees with the advice from ICES.

4.2 Hake (*Merluccius* merluccius) in Divisions VIIIc, IX and X (Southern hake)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: This stock is exploited in a mixed fishery by Spanish and Portuguese trawlers and artisanal fleets. Landings fluctuated between 6,700 and 35,000 t (1972-2009). In recent years, they increased from 6,700t in 2003 to 19,200t in 2009. Total catch in 2012 were equal to 16,600t, of which 14,600t were landings (4,370t trawlers, 4,100t other fleets and 6,100t unallocated) and 2,100t discards (13% of the total catch).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa. The advice is now based on a length-age analytical assessment (GADGET) using catch data, commercial CPUE series and survey data. This new assessment includes the Gulf of Cadiz landings which were excluded from the assessment in recent years. French catches are not considered in the assessment until the full time-series is reviewed. Unallocated landings have been included since 2011. Projections for catch options and management advice for 2014 were based on the assessment conducted in 2013.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.24	F_{max} (ICES, 2010).
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✗	✗	✗	Above target

Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	↗	↗	↗	Increasing

Fishing mortality has decreased in recent years but is well above the F_{MSY} proxy in 2012. SSB has increased since 1998 and is above the average in 2012. Most recruitments since 2005 have been above the historical mean.

MANAGEMENT OBJECTIVES: A recovery plan has been agreed by EU in 2005 (EC Reg. No. 2166/2005). The aim of the plan is to recover the stock to a spawning-stock biomass above 35 000 tonnes by 2016 and to reduce fishing mortality to 0.27. The main elements in the plan are a 10% annual reduction in F and a 15% constraint on TAC change between years. ICES has not evaluated the plan.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the transition to the MSY approach that catches should be no more than 13 123 t in 2014. If discard rates do not change from the average of the years 2010–2012, this implies landings of no more than 12 025 t.

Other considerations

Management plan

Following the agreed recovery plan (EC Reg. No. 2166/2005), a 10% reduction in F would lead to a TAC of 16 750 t, more than 15% above the 2013 TAC (14 144 t). A 15% TAC increase leads to a TAC of 16 266 t in 2014. If the discard rate remains as the mean of the last three years the catches would thus be 17 772 t. This catch is expected to lead to an SSB of 29 830 t in 2015. ICES did not evaluate the plan; however, some elements of the recovery plan were evaluated by ICES in 2010 (ICES, 2010).

The current recovery plan uses target values based on precautionary reference points that are no longer appropriate.

MSY approach

Because MSY $B_{trigger}$ has not been identified for this stock, the ICES MSY approach has been applied without consideration of SSB in relation to MSY $B_{trigger}$.

Following the ICES MSY approach implies a reduction in fishing mortality to 0.24, resulting in catches of no more than 10 001 t in 2014 and landings of 9 172 t if the discarding rate remains as the mean of the last three years. This is expected to lead to an SSB of 41 764 t in 2015.

Following the transition to the MSY approach implies a reduction in fishing mortality to 0.33, resulting in catches of no more than 13 123 t in 2014 and landings of 12 025 t if the discarding rate remains as the mean of the last three years. This is expected to lead to an SSB of 36 861 t in 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014.

STECF notes that following the provisions of the recovery plan would imply that the TAC for 2014 should be 16,266 t corresponding to an increase of 15% compared to the agreed TAC for 2013.

4.3 Whiting (*Merlangius merlangus*) in Subarea VIII and Division IXa

The advice for this stock for 2015 is the same as that for 2013 and 2014 and the text below remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Whiting is taken in a mixed demersal fishery, mainly in Divisions VIIIa,b by France and Spain. The fishery is mostly dominated by bottom trawl. Fishery statistics are currently being compiled. At present, only official landings are available, which are considered to be preliminary for the purpose of stock assessment; there are concerns about the reliability of the 2008-2009 French data.. Whiting has never been recorded in Spanish discards and is negligible in Portuguese discards. The lack of discards makes it reasonable to assume that landings can be taken as a proxy of catches. Landings statistics need to be quality-assured and confirmed for the region. Associated effort should be complied. Survey information is available and could provide information on recruitment.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment area is Subarea VIII and Division IXa.

REFERENCE POINTS: No reference points have been defined for this species in the Bay of Biscay and Atlantic Iberian waters ecoregion.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate stock trends and exploitation status. Therefore, the state of the whiting in the Bay of Biscay and Atlantic Iberian waters ecoregion is unknown.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock

RECENT MANAGEMENT ADVICE: New data (landings) available for this stock do not change the perception of the stock; therefore, the same catch advised for 2013 and for 2014 is valid for 2015. The advice for 2013 and for 2014 was: *Based on the ICES approach to data-limited stocks, ICES advises that catches should decrease by 20% in relation to the last three years average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.*

Other considerations

ICES approach for data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.

STECF COMMENTS: STECF agrees with the ICES advice for 2015. STECF notes that the stock unit definition of whiting in this area is not clear and that further work is required.

4.4 Whiting (*Merlangius merlangus*) - IX, X

This stock is dealt with in Section 4.3 of this report.

4.5 Anglerfish (*Lophius piscatorius* and *Lophius budegassa*) in Divisions VIIIa, b, d, e

Anglerfish within the two management areas VII and VIIIabde are assessed together and comprise of two species (*L. piscatorius and L. budegassa*), which are not always separated for market purposes. Details of stock status and advice are given in Section 3.40.1 and 3.40.2 of this report.

4.6 Anglerfish (*Lophius piscatorius* and *Lophius budegassa*) in Divisions VIIIc and IXa.

4.6.1 White anglerfish (*Lophius Piscatorius*) In Divisions VIIIc and IXa

FISHERIES: Anglerfish species, *Lophius piscatorius* and *L. budegassa,* are caught together in bottom trawl and gillnet fisheries. These fisheries also catch hake, *Nephrops,* and megrim. There is no minimum landing size for anglerfish, but a minimum selling weight of 500 g was fixed in 1996 to ensure marketing standards. *L. piscatorius* is mainly caught by Spanish and Portuguese bottom trawlers and gillnet fisheries. Total catch (2013) is unknown, official landings (2013) = 1,4 kt (24% bottom trawl, 60% Spanish gillnet, 4% Spanish miscellaneous gears, and 12% Portuguese artisanal gear types). Discards are known to take place but cannot be quantified.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa. For *Lophius piscatorius*, the assessment is carried out with a length-based assessment model, SS3. ICES advises on the basis of the MSY approach but cannot quantify the resulting catches. It was not possible to include discards in the assessment since although discarding occurs, it can not be quantified.

REFERENCE POINTS

Lophius piscatorius

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.19	$F_{0.1}$ (ICES, 2012b).
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

Fishing pressure

	2011	2012	2013	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	2014	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	↗	↗	↗	Increasing

Fishing mortality has been decreasing and is in 2013 estimated at just below the F_{MSY} proxy. SSB has been increasing since 1994 and has been high since 2005. Recruitment has been low in recent years with no evidence of strong year classes since 2001.

MANAGEMENT OBJECTIVES: No specific management objectives have been defined for this stock.

RECENT MANAGEMENT ADVICE:

For *Lophius piscatorius* ICES advises on the basis of the MSY approach but cannot quantify the resulting catches. The implied landings should be no more than 1937 t in 2015. Combined landings of *Lophius piscatorius* and *Lophius budegassa* should be no more than 2987 t in 2015. Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

Other considerations

MSY approach

Because the two anglerfish species are not separated in the landings, the advice of the two stocks is linked. No MSY $B_{trigger}$ has been defined for this stock; therefore, the ICES MSY approach has been applied without consideration of SSB in relation to MSY $B_{trigger}$. The status of the stock in relation to any potential biomass reference point is unknown.

Following the ICES MSY approach implies that fishing mortality be increased by 11% for this stock. To maintain fishing mortality for both stocks at or below the F_{MSY} proxy, the F multiplier of *L. piscatorius* is applied to both stocks, resulting in landings of no more than 1937 t of *L. piscatorius* in 2015. This is expected to lead to an 11% SSB increase in 2016. Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

Additional considerations

The fisheries for the two anglerfish species are managed under a common TAC. They are usually caught and recorded together in the landings statistics. Management of the two anglerfish species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to overexploitation of either species. It is impossible to adequately manage each species separately under a common TAC. As anglerfish are taken in mixed-trawl fisheries, this stock is also affected by the southern hake and *Nephrops* recovery plan (Council Regulation (EC) No. 2166/2005) effort limitation.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that both stocks are caught together in most fisheries and managed under a common TAC, and that the advice depends on the stock in the poorer condition.

STECF notes that anglerfish in VIIIc and IXa are taken in mixed-trawl fisheries and thus also affected by the southern hake and *Nephrops* recovery plan (Council Regulation (EC) No. 2166/2005) effort limitation.

To ensure recovery of anglerfish in VIIIc and IXa, it is essential that the provisions of the management plan for southern hake and *Nephrops* are fully implemented and enforced. Failure to do so may severely compromise any recovery of the anglerfish stocks. STECF therefore recommends that enforcement of the provisions of the management plan for hake and *Nephrops* is given high priority and that measures to ensure compliance with the TAC for anglerfish and effort restrictions are put in place as a matter of urgency.

4.6.2 Black-bellied anglerfish (*Lophius budegassa*) in Divisions VIIIc and IXa

FISHERIES: Anglerfish species, *Lophius piscatorius* and *L. budegassa*, are caught together in bottom trawl and gillnet fisheries. Anglerfish, hake, *Nephrops*, and megrim are partly caught in the same mixed fisheries. Spanish trawl discards are considered negligible except in occasional years when they can be high. There is no minimum landing size for anglerfish, but a minimum selling weight of 500 g was fixed in 1996 to ensure marketing standards. Total catch (2013) is unknown, official landings = 0,770 kt (55% bottom otter trawl, 11% Spanish gillnet, 33% Portuguese artisanal, and 1% other gear types). Discarding is known to occur but cannot be quantified. Discards are known to take place but cannot be fully quantified (only are known for the Spanish trawl fleet).

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa. For *Lophius budegassa* a surplus production model (ASPIC) is used to provide estimates of stock biomass and fishing mortality relative to maximum sustainable yield (MSY) values.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	50% B_{MSY}	B_{MSY} is implicit estimated from surplus production model (ICES, 2012).
	F_{MSY}	Relative value	Implicit, estimated from surplus production model (ICES, 2012). Fishing mortality values expressed relative to F_{MSY}.
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

	Fishing pressure			
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate

Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined

Biomass at the beginning of 2014 is estimated to be above MSY $B_{trigger}$. Fishing mortality has decreased since 1999 and in 2013 it was estimated to be below F_{MSY}.

MANAGEMENT OBJECTIVES: No specific management objectives have been defined for these stocks.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach but cannot quantify the resulting catches. The implied landings should be no more than 1050 tonnes in 2015. Combined landings of *Lophius piscatorius* and *Lophius budegassa* should be no more than 2987 tonnes in 2015. Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

Other considerations

MSY approach

Because the two anglerfish species are not separated in the landings, the advice of the two stocks is linked. This stock is below F_{MSY} and above MSY $B_{trigger}$. Following the ICES MSY approach implies a fishing mortality at or below F_{MSY} for both stocks, therefore, the F multiplier of *L. piscatorius* is applied to both stocks. This results in landings of *L. budegassa* of no more than 1050 t in 2015. This is expected to lead to a 3% biomass increase in 2015.

Discards are known to take place but cannot be quantified; therefore, total catches cannot be calculated.

Additional considerations

The fisheries for the two anglerfish species are managed under a common TAC. They are usually caught and recorded together in the landing statistics. Management of the two anglerfish species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to overexploitation of either species. It is impossible to adequately manage each species separately under a common TAC.

As anglerfish are taken in mixed trawl fisheries, this stock is also affected by the southern hake and *Nephrops* recovery plan (Council Regulation (EC) No. 2166/2005) effort limitation.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that both stocks are caught together in most fisheries and managed under a common TAC, and that the advice depends on the stock in the poorer condition.

STECF notes that anglerfish in VIIIc and IXa are taken in mixed-trawl fisheries and thus also affected by the southern hake and *Nephrops* recovery plan (Council Regulation (EC) No. 2166/2005) effort limitation.

To ensure recovery of anglerfish in VIIIc and IXa, it is essential that the provisions of the management plan for southern hake and *Nephrops* are fully implemented and enforced. Failure to

do so may severely compromise any recovery of the anglerfish stocks. STECF therefore recommends that enforcement of the provisions of the management plan for hake and *Nephrops* is given high priority and that measures to ensure compliance with the TAC for anglerfish and effort restrictions are put in place as a matter of urgency.

4.7 Megrim (*Lepidorhombus whiffiagonis*) in VIIIa,b,d,e.

Megrim in Divisions VIIIa,b,d,e are assessed together with megrim in Sub area VII (Section 3.41) of this report).

4.8 Megrim (*Lepidorhombus whiffiagonis* and *Lepidorhombus boscii*) in VIIIc, IX and X

4.8.1 Four-spot megrim (*Lepidorhombus boscii*) in Divisions VIIIc and IXa

FISHERIES: The southern megrim stock is almost exclusively caught in mixed bottom-trawl fisheries targeting demersal fish, including four-spot megrim, southern hake, anglerfish, and *Nephrops*. Management measures aimed at reducing fishing mortality on any of these stocks should also reduce fishing pressure on megrim. Since 2000, the Spanish trawl fleet has changed its main target species, focusing more often on species such as horse mackerel, blue whiting, or mackerel, and normally not taking megrim in the catch. Total catch (2013) = 1616 kt, where 1120 kt were ICES estimated landings (92% bottom otter trawl and 3% other gear-types) and 496 kt were discards.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa. The advice is based on an age-based analytical assessment based on landings and CPUE data series from surveys and commercial fleets. Discards are included in the assessment since the benchmark conducted in 2014. The inclusion of discards has led to only a slight upwards revision of the recruitment estimates, not altering the overall perception of stock trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	4600 t	B_{pa} (WKSOUTH, ICES, 2014c).
	F_{MSY}	0.17	F_{max}, consistent with F_{MSY} and the precautionary approach, based on stochastic stock recruitment simulation (WKSOUTH; ICES, 2014c).
Precautionary approach	B_{lim}	3300 t	B_{loss} in the 2014 benchmark assessment (WKSOUTH, ICES, 2014c).
	B_{pa}	4600 t	1.4 × B_{lim} (WKSOUTH; ICES, 2014c).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in 2014)

STOCK STATUS:

	Fishing pressure			
	2012	2013	**2014**	
MSY (F_{MSY})	✗	✗	✗	Above target

Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

SSB decreased from the late 1980s to a minimum in 2001, but since then SSB has increased and is currently above MSY Btrigger. Fishing mortality has been declining throughout the whole time-series, and it is currently above FMSY. Recruitment has been around the average since 2000, with the exception of a record high in 2009.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 1036 tonnes. If discard rates do not change from the average of the last 12[4] years (2000–2013), this implies landings of no more than 821 tonnes. Combined catches of *Lepidorhombus boscii* and *Lepidorhombus whiffiagonis* should be no more than 1244 tonnes and landings should be no more than 1013 tonnes in 2015.

Other considerations

MSY approach

Because the two megrim species (L. whiffiagonis and L. boscii) are not separated in the landings, the advice of the two stocks is linked. Fsq is above FMSY for L. boscii and at FMSY level for L. whiffiagonis. To get fishing mortality for both stocks at or below FMSY, the F multiplier of L. boscii is applied to both stocks.

Following the ICES MSY approach implies fishing mortality to be reduced to 0.17 (FMSY), resulting in landings of no more than 821 t in 2015. This is expected to lead to an SSB of 6677 t in 2016.

If discard rates do not change from the average of the last 12 years (2000–2013), this implies catches of no more than 1036 t.

Additional considerations

The two megrim species (*L. whiffiagonis* and *L. boscii*) are managed under a common TAC. They are caught and recorded together in the landings statistics. Management of the two megrim species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to overexploitation of either species. The advice on TAC is based on the stock that is in poorer condition. This may result in loss of yield from the stock that is in better condition. Future management could benefit from mixed-fishery advice for all stocks caught in this fishery if spatial considerations were taken into account.

The spatial distribution of the two stocks shows some differences that could be utilized for separate management of the two stocks. Both megrim species are distributed in Divisions VIIIc and IXa, but *L. whiffiagonis* is more northern than *L. boscii*. In addition, there is a certain bathymetric segregation between the two species. *L. boscii* has a preferential depth range of 100 to 450 m and *L. whiffiagonis* of 50 to 300 m.

[4] Discard data are not available for 2002 and 2003.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. STECF notes that discards are included in the assessment since the benchmark was conducted in 2014.

4.8.2 Megrim (*Lepidorhombus whiffiagonis*) in Divisions VIIIc and IXa

FISHERIES:

The southern megrim stock is almost exclusively caught in mixed bottom-trawl fisheries targeting demersal fish, including four-spot megrim, southern hake, anglerfish, and *Nephrops*. Management measures aimed at reducing fishing mortality on any of these stocks should also reduce fishing pressure on megrim. Since 2000, the Spanish trawl fleet has changed its main target species, focusing more often on species such as horse mackerel, blue whiting, or mackerel, and normally not taking megrim in the catch. Total catch (2013) = 240 kt, where 222 kt were ICES estimated landings (89% bottom otter trawl and 11% other gear-types) and 18 kt were discards.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa. The advice is based on an age-based analytical assessment based on landings and CPUE data series from surveys and commercial fleets. Discards are included in the assessment since the benchmark conducted in 2014. The inclusion of discards has led to only a slight upwards revision of the recruitment estimates, not altering the overall perception of stock trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	910 t.	B_{pa} (WKSOUTH; ICES, 2014c).
	F_{MSY}	0.17	F_{max}, consistent with F_{MSY} and the precautionary approach based on stochastic stock recruitment simulation (WKSOUTH; ICES, 2014c).
Precautionary approach	B_{lim}	650 t.	B_{loss} (WKSOUTH; ICES, 2014c).
	B_{pa}	910 t.	1.4* × B_{lim} (WKSOUTH; ICES, 2014c).
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in 2014)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✗	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The SSB has increased from the minimum observed in 2009 and is now above MSY $B_{trigger}$. Fishing mortality has continuously declined over the whole time-series and is currently below F_{MSY}. Recruitment has been low for over a decade, with the exception of the high 2009 year class.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 208 tonnes. If discard rates do not change from the average of the last 12[5] years (2000–2013), this implies landings of no more than 192 tonnes. Combined catches of *Lepidorhombus boscii* and *Lepidorhombus whiffiagonis* should be no more than 1244 tonnes and combined landings no more than 1013 tonnes in 2015.

Other considerations

MSY approach

Because the two megrim species (*L. whiffiagonis* and *L. boscii*) are not separated in the landings, the advice of the two stocks is linked. F_{sq} is above F_{MSY} for *L. boscii* and at F_{MSY} level for *L. whiffiagonis*. To get fishing mortality for both stocks at or below F_{MSY}, the F multiplier of *L. boscii* is applied to both stocks.

Following the ICES MSY approach implies a reduction in fishing mortality to 0.11, resulting in catches of no more than 208 t in 2015. Considering that no discard ban is in place in 2015 and if the discarding rate remains at the mean of the last three years, this would result in landings of no more 192 t. This is expected to lead to an SSB of 1343 t in 2016.

Additional considerations

The two megrim species (*L. whiffiagonis* and *L. boscii*) are managed under a common TAC. They are caught and recorded together in the landings statistics. Management of the two megrim species under a combined TAC prevents effective control of the single-species exploitation rates and could potentially lead to overexploitation of either species. The advice on TAC is based on the stock that is in poorer condition. This may result in loss of yield from the stock that is in better condition. Future management could benefit from mixed-fishery advice for all stocks caught in this fishery if spatial considerations were taken into account.

The spatial distribution of the two stocks shows some differences that could be utilized for separate management of the two stocks. Both megrim species are distributed in Divisions VIIIc and IXa, but *L. whiffiagonis* is more northern than *L. boscii*. In addition, there is a certain bathymetric segregation between the two species. *L. boscii* has a preferential depth range of 100 to 450 m and *L. whiffiagonis* of 50 to 300 m.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. STECF notes that discards are included in the assessment since the benchmark was conducted in 2014.

4.9 Plaice (*Pleuronectes platessa*) in Subarea VIII and Division IXa

The stock status and advice for this stock for 2015 remains unchanged from that given for 2013 and 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Plaice is fished by various fleets and gear types covering small-scale artisanal and trawl fisheries. Portugal and France are the major participants in this fishery. At present, only official landings are available, which are considered to be preliminary for the purpose of stock

[5] Discard data are not available for 2002 and 2003.

assessment. There are concerns about the reliability of the 2008–2009 French data. Landings may also contain misidentified flounder (*Platichthys flesus*). Landings statistics need to be quality assured and confirmed for the region, and associated effort should be compiled. 2013 official landings for plaice in Subarea VIII and Division IXa were 191 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. ICES advice is for Subarea VIII and Division IXa.

REFERENCE POINTS: No reference points have been defined for this species in the Bay of Biscay and Atlantic Iberian waters ecoregion.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2010–2011	
Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate stock trends and exploitation status. Therefore, the state of the plaice in Bay of Biscay and Iberian waters ecoregion is unknown.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock.

The “Joint statement by the Council and the Commission" (Council of the European Union Document Doc 5232/14 PECHE 15, 13 January 2014) states:

The Council and the Commission note that the fishing opportunities regulations include a number of TACs for stocks for which there is limited information on stock status and which are of low economic importance, or are taken only as by-catches, or which show low levels of quota uptake. In these cases, the Council and the Commission consider it appropriate to constrain catches at or below the TAC levels fixed for 2014. To this end, without prejudice to the Commission's right of initiative and the Council's prerogatives under Article 293(1) TFEU, the Commission and the Council consider that it would be desirable to maintain the 2014 TAC level for the stocks listed below for the following four years.

Plaice TAC unit VIII, IX, X and CECAF 34.1.1 is included in the list of the Joint statement by the Council and the Commission.

RECENT MANAGEMENT ADVICE: New data (landings) available for this stock do not change the perception of the stock; therefore, the same catch advised for 2013 and for 2014 is valid for 2015. The advice for 2013 and for 2014 was: *Based on the ICES approach to data-limited stocks, ICES advises that catches should decrease by 20% in relation to the last three years average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.*

The advice for 2015 is the same catch advised for 2013 and for 2014 (even though its value cannot be quantified), not that a further 20% reduction in catch be implemented.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.

STECF COMMENTS: STECF agrees with the ICES advice for 2015.

STECF notes that the stock unit definition of plaice in this area is not clear and that further work is required.

4.10 Sole (*Solea solea*) in Divisions VIIIa, b (Bay of Biscay)

FISHERIES: The French fleet, which consists mainly of trawlers and fixed-nets, is the major participant in the Bay of Biscay sole fishery with landings comprising about 90% of the total official international landings over the historical series. The remaining part is landed by the Belgian beam trawler fleet. The landings of the French fixed-net fishery have increased from less than 5% of total landings prior to 1985 to around 65% in recent years. This shift between fleets has resulted in a change in the selection pattern towards older fish. Total catch (2013): 4.2 kt, where 4.2 kt were ICES estimated landings (inshore trawlers 7%, offshore otter trawlers 18%, offshore beam trawlers 7%, 68% fixed nets). Discards are not quantified and considered to be negligible.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

The advice is based on an age-based analytical assessment based on landings and CPUE data series from surveys and commercial fleets. Discards are not included in the assessment.

In addition to the two commercial tuning fleets, fisheries-independent data (ORHAGO survey) were incorporated in the assessment last year following an Inter-Benchmark Procedure. This is considered to be an improvement in the quality of the assessment.

The catch and SSB in the forecast are dominated by year classes for which geometric mean recruitment is assumed. The ORHAGO survey provides information on age 1, which could in the future also be used in predicting the incoming year-class strength. The update of the maturity ogive may improve the assessment quality.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	13 000 t	B_{pa} (provisional estimate.)
	F_{MSY}	0.26	F_{max} (ICES, 2010) because stock–recruitment relationship, limited variations of recruitment, and fishing mortality pattern are known with low uncertainty.
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	13 000 t	The probability of reduced recruitment increases when SSB is below 13 000 t, based on the historical development of the stock.
	F_{lim}	0.58	Based on the historical response of the stock.

	F_{pa}	0.42	F_{lim} * 0.72

MANAGEMENT AGREEMENT: A multiannual plan has been agreed by EU in 2006 (EC Reg. No. 388/2006, Annex 7.4.21). The aim of the plan was first to bring the spawning-stock biomass above 13 000 tonnes in 2008 and there after to ensure the sustainable exploitation of the stock. ICES has not evaluated the plan.

STECF has evaluated a new management plan proposal and concluded that exploiting the Bay of Biscay sole stock at Fmsy (0.26) can be considered precautionary. An F target of 0.26 does not produce significantly higher long term yields relative to Fs in the range of 0.15-0.35. Two possible Fmsy transition options were considered: 1) A strategy of gradual annual reductions in F towards achieving Fmsy in 2015 may be combined with the current 15% constraint in interannual variation in TAC. 2) With a constant TAC strategy of 4100t from 2012 onwards, Fmsy could be reached with a 50% probability by 2015. Both strategies assume that F is maintained at Fmsy (0.26) once F has declined to that level.

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	○	Increased risk

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✗	Just below trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	○	Increased risk

The spawning stock increased from a historical low in 2003 but has been decreasing since 2012 and is currently just below MSY $B_{trigger}$. During this period, the fishing mortality has been stable around F_{pa}. The 2012 and 2013 recruitments are the lowest values in the time-series.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in 2015 should be no more than 2407 tonnes. All catches are assumed to be landed.

Other considerations

Management plan

The multiannual plan for the Bay of Biscay sole (EC Reg. No. 388/2006) does not provide any basis for a TAC advice for 2015.

Management considerations

The aim of the management plan was first to bring the spawning-stock biomass above 13 000 tonnes. This target is estimated to have been achieved. According to the plan, the Council must decide on (a) a long-term target fishing mortality rate; and (b) the rate of reduction in the

fishing mortality that should apply until the target fishing mortality rate decided under (a) has been reached. The EC has not yet defined the values for items (a) and (b).

A proposal for a management plan for sole in the Bay of Biscay has been evaluated by ICES (ICES, 2013b, 2014c). It aims to decrease fishing mortality by applying a constant TAC to reach F_{MSY} in 2015–2020. ICES considered the plan to be precautionary for all the TAC values tested, with very low probabilities of SSB falling below 13 000 t (B_{pa}), and that fixed TAC values equal to or lower than 4300 t would allow F to reach F_{MSY} before 2020.

F_{MSY} is based on F_{max}, but this value is ill defined. The current F_{max} is higher than was calculated using the 2010 data. The basis for F_{MSY} may need to be reevaluated.

MSY approach

Applying the MSY approach implies a fishing mortality at the F_{MSY} = 0.26 in 2015. It results in catches that should be no more than 2407 t in 2015. This is expected to lead to an SSB of 16 105 t in 2016, which is above B_{pa}. All catches are assumed to be landed.

PA approach

The fishing mortality in 2014 should be no more than F_{pa}, corresponding to catches of less than 3675 t in 2015. This is expected to keep SSB above B_{pa} in 2016 (14 699 t). All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that a total catch of 2407 t in 2015 on the basis of the MSY approach as advised by ICES will lead to a 37 % change on the 2014 TAC. While there is currently no legal basis to prescribe a TAC in accordance of the provisions of Article 4 of Council Regulation (EC) No. 388/2006, STECF notes that a 15% constraint on the 2014 TAC (3,800 t), would imply total catches in 2015 of 3,230 t.

STECF further notes that the Council has not yet decided on (a) a long-term target fishing mortality rate, or (b) a rate of reduction in the fishing mortality rate for application until the target fishing mortality rate decided under (a) has been reached, as specified in Article 3.1 of Annex 7.4.21 of the multiannual plan for Bay of Biscay sole in Divisions VIIIa and VIIIb, Council Regulation (EC) No. 388/2006.

4.11 Sole (Solea spp.) - VIIIcde, IX, X

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Sole is caught mainly in a small-scale multi-gear coastal mixed fishery. Only preliminary landings are available. 2013 official landings for *Solea* spp. (*S. solea, S. senegalensis*, and *P. lascaris*) in Divisions VIIIc and were equal to 873 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. ICES advice is for Subarea VIIIc and Division IXa.

REFERENCE POINTS: No reference points have been defined for sole in Divisions VIIIc and IXa.

STOCK STATUS:

F (Fishing Mortality)

	1977–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	1977–2011	
Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate stock trends and exploitation status. More information is needed on the contribution of individual *Solea* species to the total landings, which are clearly incomplete and erratic. Landings statistics need to be confirmed and associated effort should be compiled. Sole is poorly suited for monitoring by the surveys carried out in this area. Specific data on life history parameters and length composition is only available for some areas in Division IXa and should be collected for other areas. Therefore, the state of the sole in Divisions VIIIc and IXa is unknown. Landings are mainly taken in Division IXa.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock.

The “Joint statement by the Council and the Commission" (Council of the European Union Document Doc 5315/13 PECHE 15, 15 January 2013) states:

The Council and the Commission note that the fishing opportunities regulations include a number of TACs for stocks for which there is limited information on stock status and which are of low economic importance, or are taken only as by-catches, or which show low levels of quota uptake. In these cases, the Council and the Commission consider it appropriate to constrain catches at or below the TAC levels fixed for 2013. To this end, without prejudice to the Commission's right of initiative and the Council's prerogatives under Article 293(1) TFEU, the Commission and the Council consider that it would be desirable to maintain the 2013 TAC level for the stocks listed below for the following five years.

Sole TAC unit Divisions VIIIc, VIIId, and VIIIe, and Subareas IX and X; EU waters of CECAF 34.1.1 are included in the list of the Joint statement by the Counil and the Commission.

RECENT MANAGEMENT ADVICE: New data (landings) available for this stock do not change the perception of the stock; therefore, the same catch advised for 2013 and for 2014 is valid for 2015. The advice for 2013 and for 2014 was: *Based on the ICES approach to data-limited stocks, ICES advises that catches should decrease by 20% in relation to the last three year average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.*

The advice for 2015 is the same catch advised for 2013 and for 2014 (even though its value cannot be quantified), not that a further 20% reduction in catch be implemented.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years average. Due to the uncertainty in the landings data, ICES is not able to quantify the resulting catch.

STECF COMMENTS: STECF agrees with the ICES advice for 2015.

STECF notes that the stock unit definition of sole in this area is not clear and that further work is required.

4.12 Rays and skates in ICES Subareas VIII and IX

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Most catches of elasmobranchs in the Bay of Biscay are from trawler fleets operating in Divisions VIIIa, b, d and IXa (Spain). Elasmobranch catches from western Iberian waters (ICES Division IXa) are mainly from the Portuguese polyvalent fleet and in particular from the métiers using nets or trammel nets.

Skates and rays fisheries are currently managed under a common TAC, although this complex comprises species that have different vulnerabilities to exploitation. TAC advice is based on the status of the main commercial species, with species-specific advice for other species also provided where relevant.

Demersal elasmobranchs in this region are caught in mixed target and non-target fisheries. TACs alone cannot adequately manage these stocks as catches may still be taken in mixed fisheries and discarded, even after the TAC is exhausted.

Management measures such as closed areas/seasons or effort restrictions may better protect demersal elasmobranchs. In particular, measures to protect spawning/nursery grounds would be beneficial. ICES could provide advice on such measures.

At present rays and skates fisheries are managed by means of a generic, multi-species TAC, along with prohibitions for severely depleted species.

There are few records of the *Dipturus* complex in this ecoregion. Most records are from the northern part of the ecoregion. It is likely that both *D.* cf. *intermedia* and *D.* cf. *flossada* occur in this area. Without further information on stock structure and distribution, it is not possible to provide separate advice for these two species in this ecoregion.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	Not defined	
Approach	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

STOCK STATUS:

Three commercial skate species (thornback ray, spotted ray, and cuckoo ray) show increasing trends in relative abundance in fishery-independent trawl surveys. There is evidence of a long-term decline to depleted levels in the distribution and relative abundance of one commercial species (*Dipturus batis* complex). Trends in the relative abundance of two other commercial species (blonde ray, undulate ray) are unclear. Starry ray is an abundant non-commercial species and is almost exclusively discarded, and stock trends are decreasing. Discard survivorship is not known.

The advice is based on the stock status of the main commercial species in the ecoregion, with species-specific advice provided below. Landings of skates and rays in the North Sea have generally declined, and this is associated with changes in species composition and relative abundance.

Status of individual stocks is given in the table below.

Species	**Area**	**State of stock**
Raja clavata (thornback ray)	VIII IXa	Stable /increasing Stable
Leucoraja naevus (cuckoo ray)	VIIIabd XIa	/Increasing Uncentain
Leucoraja naevus (cuckoo ray)	VIII IXa	Uncertain Uncertain
other species	VIII IXa	Uncertain Uncertain
Dipturus batis (Common skate) complex	All areas	Depleted
Raja montagui (Spotted Ray)	VII and IXa	Uncertain

RECENT MANAGEMENT ADVICE: The previous advice was given for 2011 and 2012. The basis of this advice was the precautionary approach. This year, individual advice is given for each of the main species, on the basis of ICES approach to data-limited stocks.

Advice Summary for 2013-2014

ICES provides advice on the overall exploitation (landings and discards) of the ray and skates species assemblage, and also individual species (Table 7.4.24.1). ICES does not advise that general or species-specific TACs be established for each species, at present. This is because a TAC is not considered the most effective means to regulate fishing mortality in these bycatch species.

ICES advises that a suite of species- and fishery-specific measures be developed to manage the commercial fisheries and achieve recovery of the depleted species. Such measures should be developed by management authorities involving all stakeholders; ICES could assist in this process.

Management measures should be framed in a mixed-fisheries context, considering the overall behaviour of demersal fleets, and the drivers for such behaviour. When the TAC is exhausted, catches may continue to take place, but are discarded. In order to achieve optimal harvesting of the

commercial species, and to assist recovery of the depleted species, a suite of measures should be put in place.

Closure to fishing of spawning and/or nursery grounds, and measures to protect the spawning component of the population (e.g. maximum landing size) are powerful tools to manage rays and skates. In some cases, single-species TACs may be appropriate, especially for easily identified species and/or discrete stocks in limited distribution areas.

Given that the European Community intends to introduce a ban on discards, minimum or maximum landing sizes should be carefully considered before they are introduced, because they could lead to increased discards. Size limits may best be applied in target fisheries, if discard (escapee) survival can be shown to be high.

ICES advises that white skate (*Rostroraja alba*) should remain on the Prohibited species list, as it appears to be depleted in this area.

Advice for 2013-2014 by individual stocks

Species	**Area**	**Advice**
Raja clavata (thornback ray)	VIII IXa	0% -20%
Leucoraja naevus (cuckoo ray)	VIII IXa	+6% -20%
Other species	VIII IXa	-20% -20%
Other species	IXa	-20%
Raja alba (White skate)	All areas	Remain on prohibited species list
Dipturus batis (Common skate) complex	All areas	No targed fisheries, minimize by-catch
Raja montagui (Spotted Ray)	VIII and IXa	-20%
Raja brachyuran (Blonde ray)	IXa	-20%

Outlook for 2012 and 2013

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data. No targeted fishing should be permitted for *Raja undulata* and the *Dipturus batis* complex.

MSY transition scheme

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2013 and 2014. The rate of exploitation of these stocks relative to F_{MSY} is not currently known. Advice is provided

based on an examination of the stock status of each of the different stocks in the divisions within the ecoregion, with the most appropriate advice for the majority of the stocks provided.

PA approach

White skate (Rostroraja alba) – No reliable recent records. The status is uncertain, although it is considered near-extirpated from parts of its former range.

STECF COMMENTS: STECF agrees with the ICES advice.

4.13 *Scyliorhinus canicula* and *Scyliorhinus stellaris* in Subareas VIII, IX and X

4.13.1 Scyliorhinus canicula in VIIIc **and** IXa

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Lesser spotted dogfish *Scyliorhinus canicula* is taken primarily as a by-catch in mixed demersal fisheries targeting other species and a large proportion of the catch is discarded with survivorship considered to be high, although in some coastal areas there are seasonal small-scale directed fisheries (especially for use as bait in pot fisheries, but this is unquantified). In the Bay of Biscay and Iberian waters landings of *Scyliorhinus* spp. have recorded since the mid 1990s. For division VIIc and IXa and landings have fluctuated between 305t and 1374t reaching 904t in 2011.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown

Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

In the absence of defined reference points, the status of the stocks of S*cyliorhinus canicula* cannot be evaluated. The following provides a qualitative summary of the general status of the stocks based on surveys and landings assessment:

Species	**Area**	**State of stock**
Scyliorhinus canicula (lesser spotted dogfish)	VIIIabd	Increasing
Scyliorhinus canicula (lesser spotted dogfish)	VIIIc	Stable /increasing
Scyliorhinus canicula (lesser spotted dogfish)	IXa	Stable

Species-specific landings of lesser-spotted dogfish are stable though data are not complete. The average of the stock size indicator (kg per 30 minutes) in the last two years (2010-2011) is 9% lower than the average of the five previous years (2005-2009).

RECENT MANAGEMENT ADVICE:

Scyliorhinus canicula (Lesser-spotted dogfish)

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	Less than 1.7 thousand t
Cautiously avoid impaired recruitment (**Precautionary Approach**)	Less than 1.7 thousand t
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

There is no TAC in place for *Scyliorhinus canicula.*

Advice for 2013-2014 by individual stocks

Species	**Area**	**Advice**

Scyliorhinus canicula (lesser spotted dogfish)	VIIIc, IXa	Decrease in catches of 9% No individual TAC

For this stock the abundance is estimated to have decreased by 9% between 2005 and 2009 (average of the five years) and 2010–2011 (average of the two years). This implies a 9% decrease in catches in relation to the last three years' average. Because the data for catches of lesser-spotted dogfish are not fully documented (due to the historical use of generic landings categories), ICES is not in a position to quantify the result.

Given that there is a consistent increase in stock size over an extended period of time, no additional precautionary buffer is needed.

ICES does not advise that an individual TAC be set for this stock, at present.

Outlook for 2013 and 2014

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data.

MSY transition scheme

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2013 and 2014. The rate of exploitation of these stocks relative to F_{MSY} is not currently known.

STECF COMMENTS: STECF agrees with the ICES advice.

4.13.2 Scyliorhinus canicula in VIIIabd

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Lesser spotted dogfish *Scyliorhinus canicula* is taken primarily as a by-catch in demersal fisheries targeting other species and a large proportion of the catch is discarded, although in some coastal areas there are seasonal small-scale directed fisheries. In the Bay of Biscay and Iberian waters landings of *Scyliorhinus* spp. have recorded since the mid 1990s. For divisions VIIIabd landings have fluctuated from 833t to 1727t with an incresing global trend. In 2011 Lesser spotted dogfish landing were 1459t.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. The assessment is based on survey and landing trends.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	Not defined	
Approach	F_{MSY}	Not defined	
Precautionary	B_{lim}	Not defined	
	B_{pa}	Not defined	

Approach	F_{lim}	Not defined	
	F_{pa}	Not defined	

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

Species-specific landings of lesser-spotted dogfish are stable, though data are not complete. The stock is estimated to be increasing because commercial and survey catch rates are increasing. Given increased abundance and reduced catches, it can be inferred that exploitation rate (fishing mortality) has declined. The average of the stock size indicator (kg day-1) in the last two years (2010-2011) is 39% higher than the average of the five previous years (2005-2009).

In the absence of defined reference points, the status of the stocks of S*cyliorhinus canicula* cannot be evaluated. The following provides a qualitative summary of the general status of the stocks based on surveys and landings assessment:

Species	**Area**	**State of stock**
Scyliorhinus canicula (lesser spotted dogfish)	VIIIabd	Increasing

RECENT MANAGEMENT ADVICE:

Scyliorhinus canicula (Lesser-spotted dogfish)

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach**	Less than 1.7 thousand t

with caution at low stock size	
Cautiously avoid impaired recruitment (**Precautionary Approach**)	Less than 1.7 thousand t
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

There is no TAC in place for *Scyliorhinus canicula.*

Advice for 2013-2014 by individual stocks

Species	**Area**	**Advice**
Scyliorhinus canicula (lesser spotted dogfish)	VIIIabd	Maximum increase of 20% No individual TAC

Outlook for 2013 and 2014

No analytical assessment or forecast can be presented for these stocks. The main cause of this is the lack of a time-series of species specific landings data.

MSY transition scheme

Advice by species/stock is provided in the table above. This advice is based on an application of the MSY approach for stocks without population size estimates. This advice applies to 2012 and 2014. The rate of exploitation of these stocks relative to F_{MSY} is not currently known.

STECF COMMENTS: STECF agrees with the ICES advice.

4.14 Rays and skates in ICES Subareas X, XII, and XIV (Azores and Mid- Atlantic Ridge).

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: There are at least seven species of skate (Rajidae) in the shallower parts of the Azores and Mid-Atlantic Ridge, with other deep-water species also occurring in the area. Thornback ray is the dominant ray species in this area. Stock boundaries are not known for the species in this area, neither are the potential movements of species that also occur on the continental shelf of mainland Europe. The deep-water species at Azores and the Mid-Atlantic Ridge may have relatively wide geographic distributions. The connectivity between shallower water species around the Azores with mainland Europe is unclear, and these species may form discrete stocks. This area is mainly a natural deep-water environment exploited by small-scale fisheries in the Portuguese EEZ in the Azores and industrial deep-sea fisheries in international waters. Landings from the Mid-Atlantic Ridge remain very small and variable, or even absent, and few vessels find the Mid-Atlantic Ridge fisheries profitable. Demersal elasmobranchs are caught in the Portuguese EEZ in the Azores by a multispecies demersal fishery, using handlines and bottom longlines, and by the black scabbardfish fishery using bottom longlines. The most commercially important elasmobranchs caught and landed from these fisheries are *Raja clavata* and *Galeorhinus galeus*. Rays and skates (mainly thornback ray) at the Azores and Mid-Atlantic Ridge (ICES Divisions X, XII, and XIV are predominantly an Portuguese fishery. Landings increased from around 50 tonnes in the late 80's and early 90's to about 100 tonnes in the late 90's and early 2000's. Recently landings have increased from 60 tonnes in 2009 to 91 tonnes in 2011.

SOURCE OF MANAGEMENT ADVICE: The main recent source of information is ICES. However no species specific management advice is given.

REFERENCE POINTS: No precautionary reference points have been agreed for tope in the Northeast Atlantic.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	,	Increasing

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation		Decreasing

Landings have fluctuated over time, but have been higher since the mid-1990s. Existing survey data are limited for nearly all species. The dominant species in catches at Azores and the Mid-Atlantic Ridge is thornback ray; for this species the average of the stock size indicator (in number) in the last two years (2010–2011) is lower by more than 50% compared to the three previous years with data (2005, 2007, and 2008).

RECENT MANAGEMENT ADVICE:

Advice for 2013-2014

As thornback ray is the dominant ray species at Azores and the Mid-Atlantic Ridge, the advice for skates and rays is based on the status of this species. Based on ICES approach to data-limited stocks, ICES advises that catches should be decreased by 36%. Because the data for catches are not fully documented and not reliable, ICES is not in a position to quantify the result.

ICES does not advise that general or species-specific TACs be established at present. This is because a TAC is not the most effective means to regulate fishing mortality in these bycatch species. ICES advises that a suite of species- and fishery-specific measures be developed to manage the commercial fisheries on these species and achieve recovery of the depleted species. Such measures should be developed in collaboration between management authorities and all stakeholders. ICES could assist in this process. Species- and fishery-specific measures may include seasonal and/or area closures, technical measures, and tailored measures for target fisheries.

This is the first year ICES is providing quantitative advice for data-limited stocks.

Other considerations

ICES approach to data-limited stocks

As thornback ray is the dominant ray species at Azores and the Mid-Atlantic Ridge, advice for skates and rays is based on the status of this species.

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the five preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For thornback ray the abundance is estimated to have decrease by more than 20% between 2005 and 2009 (average of the three years with data) and 2010–2011 (average of the two years). This implies a decrease of catches of 20% in relation to the last three years' average catch.

Additionally, considering that exploitation is unknown, ICES advises that catches should decrease by a further 20% as a precautionary buffer, corresponding to a total catch reduction of 36%. Because the data for catches are not fully documented and considered unreliable, ICES is not in a position to quantify the result.

ICES does not advise that general or species-specific TACs be established at present. This is because a TAC is not the most effective means to regulate fishing mortality in these bycatch species. ICES advises that a suite of species- and fishery-specific measures be developed to manage the commercial fisheries for these species and achieve recovery of the depleted species. Such measures should be developed in collaboration between management authorities and all stakeholders. ICES could assist in this process. Species- and fishery-specific measures may include seasonal and/or area closures, technical measures, and tailored measures for target fisheries.

Additional considerations

There is no TAC for skates in this region. Landings of skates and rays have fluctuated between 60 and 90 t per year since 2001. Restrictive quotas on other deep-water species may affect the catch of skates and rays due to restrictions in effort.

Management measures such as closed areas/seasons or effort restrictions may be preferable to manage fisheries and protect rays and skates, rather than a TAC. In particular, measures to protect spawning/nursery grounds would be beneficial. ICES could provide advice on such measures.

Fisheries are restricted in certain areas of the Mid-Atlantic ridge to protect coral and other vulnerable ecosystems.

Fishing below 200 m using gillnets and other forms of tangle netting is banned to prevent damage to vulnerable habitats.

Management of deep-water fisheries by NEAFC contains measures that affect fisheries where these species are caught. These include effort limitations, area and gear restrictions (http://www.neafc.org/measures). The recommendations that are relevant to elasmobranchs in this region include:

- Recommendation III (2006): Since 2006 NEAFC has prohibited fisheries with gillnets, entangling nets, and trammelnets at depths below 200 m and has introduced measures to remove and dispose of unmarked or illegal fixed gear and retrieve lost gear to minimize ghost fishing;
- Recommendations IX (2007) and IX (2008): Bottom fishing (bottom trawling and fishing with static gear, including bottom-set gillnets and longlines) was forbidden in some areas of Hatton Bank and Rockall Bank;
- Recommendation XVI (2008): The access to the new bottom fishing areas (considered as other areas not mapped as actual existing bottom fishing areas) was limited;
- Recommendation VII (2009) and REC VI (2010): Since 2009 effort was limited and set at 65% of the highest level put into deep-sea fishing in previous years for the relevant species;

- Recommendation XIV (2009): During 2009 five areas (including three seamounts) on the Mid-Atlantic Ridge in the high seas in the Northeast Atlantic, were closed temporarily to bottom fisheries (fishing gears that are likely to contact the seabed) under its policy for area management.

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014.

4.15 Tope (*Galleorhinus galeus*) in ICES Subareas VIII, IX and X

Advice from ICES on tope is provided at the NE Atlantic regional level and is given in Section 8.12 of this report. At present, STECF is unable to provide additional information and advice for subareas VIII, IX and X separately.

4.16 Other Demersal elasmobranches in the Bay of Biscay and Iberia

Advice from ICES for Angel sharks (Squatina *squatina*) and Smooth Hounds (*Mustellus spp*) is provided at the NE Atlantic regional level and is given in Sections 8.19 and 8.20 of this report.

4.17 Anchovy (*Engraulis encrasicolus*) in Division VIII (Bay of Biscay)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHRIES: Anchovy is targeted **by** trawlers and purse-seiners. The Spanish and French fleets fishing for anchovy in Subarea VIII are spatially and temporally well separated. The Spanish fleet operates mainly in Divisions VIIIc and VIIIb in spring, while the French fleets operate in Division VIIIa in summer and autumn and in Division VIIIb in winter and summer. Since 2003 the fleets of both countries have decreased.

After 5 years of closure, the anchovy fishery was re-opened in 2010. Catches in 2011and 2012 were 14 530 t and 14 402 t respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS:

	Type	**Value**	**Technical basis**
MSY Approach	MSY $B_{escapement}$	33 000 t	Provisional value based on B_{pa}.
	F_{MSY}	Not defined.	
Precautionary approach	B_{lim}	21 000 t	B_{lim} : B_{loss} = 21 000 t (1989 SSB)
	B_{pa}	33 000 t	$B_{pa} = B_{lim} \times \exp(1.645\sigma)$
	F_{lim}		Not defined
	F_{pa}	1.0–1.2	F_{pa}: = F for 50% spawning potential ratio, i.e. the F at which the SSB/R is half of what it would have been in the absence of fishing.

(unchanged since 2010)

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning-stock biomass has been above the limit reference point since 2006 and above the MSY $B_{escapement}$ since 2010. Recruitment in 2013 is around the 30th percentile of the historical series. The harvest rate in 2012 was below the average of the historical series since 1987 (the years 2005–2009 were excluded due to fishery closures).

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary approach that catches from 1 July 2013 to 30 June 2014 should be no more than 18 000 tonnes.

Other considerations

Management plan

Following the management plan proposed by the European Commission in 2009 (COM/2009/399 final), the TAC for the fishing season running from 1 July 2013 to 30 June 2014 should be established at 17 100 tonnes (as stated in Annex 1 of the proposal for an SSB in the range 56 001–57 000 t).

MSY approach

If the objective is to maintain the spawning-stock biomass above the provisional MSY Bescapement in 2014, a catch of less than 51 000 t can be taken in the period 1 July 2013 to 30 June 2014. However, such a catch is not considered precautionary as it leads to a 31% probability of SSB being less than B_{lim} by 2014.

PA approach

To reduce the risk to less than 5% of the SSB in 2014 falling below Blim, catches in the period 1 July 2013–30 June 2014 should be less than 18 000 t.

Additional considerations

In the past, a TAC was set independently of the state of the stock in the range of 30 000–33 000 t, and the TAC had limited impact on regulating catches in the fishery.

Recent developments in management have been moving towards an in-year monitoring regime, as previously recommended by ICES. The assessment of anchovy is based on the survey results in the spring and catch data. Hence, the most up-to-date assessment can be obtained in June as done in this assessment. TACs may be set for the whole period July–June.

Harvest control rules (HCR) for anchovy have been tested outside ICES, for the EC proposal of a long-term management plan for this fishery. A draft management plan has been proposed by the EC in cooperation between STECF and the South Western Waters RAC. This plan has not yet been formally adopted by the EU. The plan is based on a constant harvest rate (30%), and sets a TAC as a percentage of the point estimate of the SSB as assessed at the start of the TAC period which runs

from 1st July to 30th June, but with an upper bound on the TAC (of 33 000 t), and with a minimum TAC level (of 7000 t) applicable at SSB estimates between 24 000 t and 33 000 t. ICES notes that the criterion for accepting the HCR as precautionary would include rules that imply a low risk of reducing the SSB to a level which may imply further reduction in recruitment. Supplementary measures (area closures, minimum landing size) may be considered in addition to TACs.

Catch options for the next year depend heavily on the coming recruitment for which there is no information yet. The autumn JUVENA survey started in 2003. ICES considers that the JUVENA acoustic index of juveniles is a valid indicator of the strength of the incoming recruitment and hence useful for improving the forecast of the population and potentially its assessment. The use of this index as a tool to forecast next year's population , could serve to either review the TAC that currently runs from July to June, or to generate preliminary advice for a TAC going from January to December, based on the autumn acoustic survey.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock but notes that the ICES advice is not consistent with the provisions of the proposed management plan. In June 2008 STECF endorsed the approach and findings of the evaluation of the management plan presented in the report of the SGBRE-08-01 Working Group.

STECF notes that the proposed management plan has been applied to derive annual TACs for the past 3 years (2010-2011, 2011-12 and 2012-13). The provision of the proposed management plan prescribe a TAC of 17 100 tonnes for the period 1 July 2013 to 30 June 2014 and would give rise to a SSB in 2014 in the range 68,001–69,000 t as specified in Annex 1 of the proposed plan.

Review of harvest control rules for anchovy in the Bay of Biscay

Following its review of harvest control rules (HCRs) to propose the TAC for anchovy in the Bay of Biscay (EWG 13-20, and PLEN 13-03), STECF advises that the HCR currently used and the alternative HCR proposed by the SWWRAC are both consistent with the objectives of the plan.

4.18 Anchovy (*Engraulis encrasicolus*) in Sub-area IX

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Fisheries for anchovy take place mainly by purse-seiners in Division IXa South. Contribution from other fleets in the recent fishery is almost negligible. The fleets in the northern part of Division IXa, which target sardine, occasionally target anchovy when abundant, as occurred in 1995. Total catch in 2011 were 10,076 t and 5,589 t in 2012 (99.6% purse-seiners, 0.4% other gear types).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been set for the stock. The observed harvest on the southern stock has been in the range of 10–40%. These harvest rates correspond to approximately 90–66% spawning biomass per recruit (SBPR).

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning Stock Biomass)	
	2010–2012

Qualitative evaluation	?	Variable without trend

In Division IXa South (where the main part of the catch is taken), the fishery seems to have been sustainable over the period and the survey biomass is highly variable without clear trends. The 2013 biomass index is 49% below the median historical survey results (PELAGO). In the northern area the biomass index (PELAGO and PELACUS) is 34% above of the historical median in 2013, decreasing from very high values in 2011. The observed harvest rate on the southern stock has been in the range of 10–40%; for the northern stock the harvest rate was around 14% in 2011, which is considered low. There is no information on recruitment that will form the bulk of the catches in 2014.

RECENT MANAGEMENT ADVICE: ICES cannot give catch advice for 2014. This is due to the lack of available data on year classes that constitute the bulk of the biomass and catches. ICES notes, however, that the historical fisheries and management measures seem to have been sustainable.

Other considerations

No reliable analytical assessment can be presented for this stock. This is because insufficient data are available. Fishing possibilities cannot be projected.

Precautionary considerations

The historical fisheries management seems to have been sustainable. No catch advice can be given for 2014 because of lack of available data for the year classes that will constitute the bulk of the biomass and catches.

Additional considerations

As this stock experiences high natural mortality and is highly dependent upon recruitment, an in-season management or alternative management measures could be considered. Information from the PELAGO and PELACUS spring surveys available on 1st of May could be used as a basis for in-year advice, depending on the availability of time-series for these surveys.

Results from the acoustic survey (ECOCÁDIZ*)* in early August this year will contribute to the perception about the state of the anchovy biomass in Division IXa South in 2013. Besides maintaining the current monitoring system, an abundance survey of (0-group) juveniles is needed to improve catch advice. Juveniles will constitute the bulk of the spawning biomass and catch in 2014.

Recent studies on genetics indicate that the stock inhabiting Division IXa South (Algarve and Cadiz) is different genetically from the one inhabiting the remaining parts of Division IXa (Zarraonaindia *et al.*, 2012). Given the differences in genetics and stock dynamics between the northern and southern parts of the area, this might imply separate management in these two regions of Division IXa.

The state of the stock in the southern area is derived from trends in the spring Portuguese acoustic survey as the main descriptor since this is the only 2013 index. A recruitment survey took place in autumn 2012 (ECOCÁDIZ RECLUTAS) pointing towards a recruitment below average, which is in line with the biomass index. The ECOCÁDIZ acoustic survey will be carried out in early August.

In the northern area, the combined PELAGO and PELACUS acoustic survey is used to describe the stock. The high 2011 biomass index in the survey is supported by high catches in this area. Length samples of the anchovy indicated that the outburst was due to recruitment from the area.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014.

4.19 Anchovy (*Engraulis encrasicolus*) in Sub-area X

ICES has not assessed this stock and STECF has no access to any stock assessment information on anchovy in this area.

4.20 Horse *mackerel* (*Trachurus trachurus*) in ICES division IXa

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The horse mackerel is caught in mixed fisheries. Changes in the availability of other species caught in the same fisheries could affect the targeting of horse mackerel. Traditionally, horse mackerel catches show a large proportion of juveniles. Recently the importance of the Spanish bottom trawl fleet, targeting mainly adult fish, is increasing.

Catches decreased from the early 1960s but have been relatively stable since the early 1990s at 20 000 t – 25 000 t. Total catches in 2012 reached 24 900 t, just above the average of the last five years (2008-2012).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No precautionary reference points have been defined for this stock. $F_{35\%SPR}$ (0.11) is proposed as a proxy for F_{MSY}. Historical fishing mortalities have on average (0.09) been at or below the candidate F_{MSY} (though actual estimates are very uncertain).

MANAGEMENT AGREEMENTS: No specific management objectives are known to ICES.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
Qualitative evaluation	→	→	→	Below long term average

Fishing mortality has decreased in the last two years. The SSB has decreased gradually since 2007 and is at present around 30% below the long-term average. Recruitment is estimated to be above average in 2011.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 35 000 t in 2014. All catches are assumed to be landed.

Other considerations

MSY approach

Since MSY $B_{trigger}$ has not been identified for this stock, the ICES MSY approach has been applied without consideration of SSB in relation to MSY $B_{trigger}$.

Following the ICES MSY approach implies that fishing mortality can increase to F_{MSY}, resulting in catches of no more than 35 000 t in 2014. This is expected to lead to an SSB of 233 000 t in 2015. Discards are considered negligible and therefore all catches are assumed to be landed.

Other considerations

Currently, the biomass is 30% below the long-term average. Following the MSY approach implies an increase in fishing mortality. Managers may want to consider keeping F at the 2013 level to ensure a greater increase in biomass than by fishing at F_{MSY}.

The traditional fishery across fleets has for a long time targeted juvenile age classes. This exploitation pattern combined with at a moderate exploitation rate does not seem to have been detrimental to the dynamics of the stock.

The advice pertains to *Trachurus trachurus*, while the TAC is set for all *Trachurus* species, including *T. picturatus* (blue jack mackerel) and *T. mediterraneus*. In 2011 12% of the catches consisted of other species than *T. trachurus*, and this percentage can vary from year to year. ICES has no information on the status of the other *Trachurus* species in this area.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014.

4.21 Horse mackerel (*Trachurus spp*) in CECAF areas (Madeira Island)

No additional information on this stock was available to the STECF since 2012, hence the text below remains unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

STECF did not have access to any recent stock assessment information on *Trachurus spp* in this area. ICES has reported that catches of horse mackerel have been around 1500 tonnes from 1986 to 1990. Since then catches have declined to less than 700 t. A TAC in area ICES X for 2010 was set to 1229 t and was taken exclusively by Portugal. No TAC has been set since 2010.

STECF COMMENTS: No comments

4.22 Horse mackerel (*Trachurus spp*) in CECAF areas (Canary Islands)

No additional information on this stock was available to the STECF since 2012, hence the text below remains unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

STECF did not have access to any recent stock assessment information on horse mackerel in this area.

A TAC in area ICES X for 2010 was set at 1229 t and was taken exclusively by Spain. No TAC has been set since 2010.

STECF COMMENTS: No comments

4.23 Blue jack *mackerel* (*Trachurus picturatus*) in Subdivision Xa2 (Azores)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERY: The blue ***jack*** mackerel (*Trachurus picturatus*) is the only *Trachurus* species around the Azores Islands. It has traditionally been one of the favourite species for human consumption in the

Azores and is targeted by an artisanal fleet using seine nets close to the coast of the Azorean islands. The blue jack mackerel is also the main species used as live bait by the local bait boat fleet, which targets tuna species. The demersal fleet also catches blue jack mackerel, usually large specimens, in the multispecies fishery for deep-water species, where several types of hooks and lines gears are used. Those gears vary from handlines, using one to several hundred hooks, to the bottom longlines**.**

ICES has reported that landings of *T. picturatus* have been around 3000 t between 1986 and 1990. From 1991 onwards, they followed a general decreasing trend to minimum values around 650 t in 1999-2000. A new increasing trend was registered in the last decade, with an average landing value for the last five years (2007-2011) of 2026 t. A reduction in catches similar to recent periods also occurred in 2012 (1131 t). However, landings may not represent the actual catches because discards or fish used for bait are not accounted for. A TAC of 3 072 t, which is taken exclusively by Portugal has been set each year since 2010

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been defined.

STOCK STATUS: No assessment can be presented for this species in the waters of the Azores.

F (Fishing Mortality)		
	2008–2010	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2008–2010	
Qualitative evaluation	↗	Increase

The advice is based on commercial abundance indices from the main fleets, used as an indicator of stock trends. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. Signals from different fleets give contradictory signals on stock dynamics. A reduction in catches similar to recent periods also occurred in 2012, which may be the result of recruitment fluctuations. The advice was therefore not revised this year.

RECENT MANAGEMENT ADVICE: The 2012 advice for this stock is biennial and valid for 2013 and 2014: *ICES advises on the basis of the approach for data limited stocks that catches should be no more than 1800 tonnes.*

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that on the basis of the ICES approach to data-limited stocks, catches in 2014 should be no more than 1,800 t.

4.24 Sardine (*Sardina pilchardus*) in *Divisions* VIIIa,b,d and Subarea VII

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Most catches are taken by purse-seiners and pelagic trawlers. 90% of the French catches are made from purse-seiners. Sardine catches are highest in the second semester of the year. In Spain, vessels target anchovy, mackerel, sardine, and horse mackerel; in summer, part of the fleet

switches to tuna fishing during quarter 3. Discards are unknown but the available information suggest their magnitude is low and variable depending on the vessel type. Fleets and catches in subarea VII are very variable and present a mainly opportunistic nature although there are also locally some long well established small sardine fishery (e.g. Cornwall in UK, Brittany in France). In 2012, total catch was 37 kt, 100% being landed (80% purse seiners, 4% pelagic trawl, 16% diverse fleets in VII). Discards are considered negligible.

SOURCE OF MANAGEMENT ADVICE:

The main management advisory body is ICES.

REFERENCE POINTS:

No reference points are defined for this stock. Cohort curve analysis from the acoustic survey and catches in Division VIIIabd suggests F is around or below natural mortality (M), and is likely to be close to maximum sustainable yield.

STOCK STATUS:

F (Fishing Mortality)		
	2000–2012	
Qualitative evaluation		Below possible reference points

SSB (Spawning Stock Biomass)		
	2009–2013	
Qualitative evaluation		Decreasing to just below long term average

Catches have been relatively stable since 2000 with an increasing trend in divisions VIIIa,b,d and decreasing in subarea VII. The average of the combined biomass indices in the last two years (2011-2012) are around 27% lower than the average of the three previous years (2008-2010) in the divisions VIIIa,b,d. Recruitment in 2012 is the highest in the time series. An analysis shows that F is just below natural mortality and is likely to be close to maximum sustainable yield. There is no biomass or recruitment information for Subarea VII.

RECENT MANAGEMENT ADVICE:

This is the first time ICES gives advice for sardine in Divisions VIIIa,b,d and subarea VII. ICES advises on the basis of precautionary considerations catches of no more than 27 554 t. Discards are assumed to be negligible, therefore all catches are assumed to be landed. This advice is applicable for 2014 and 2015

Other considerations

No analytic assessment can be presented. The main cause of this is lack of data, and times series of age structure are too short for divisions VIIIa,b,d while they are non-existent in subarea VII for major countries involved in that fishery. Therefore, fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data-limited stocks for which biomass indices are available, ICES uses as harvest control rule an index-adjusted status-quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass is estimated to have decreased by more than 20 % between 2009- 2011 (average of the three years) and 2012-2013 (average of the two years). Indices are only available for VIIIabd (where major catches come from) but considered representative for the whole stock.

This implies a decrease of catches of at most 20% in relation to the average of the last 3 year catch, corresponding to catches of no more than 27 554 t.

Considering that exploitation is likely to be close to maximum sustainable yield, no additional precautionary reduction is needed.

Discards are known to take place but considered negligible, therefore all catches are assumed to be landed.

Additional considerations

Sardine is distributed in the Iberian region, to the north in Subareas VII and VIII and in the North Sea, and to the south on the Moroccan shelf. The information presented here assumes that sardine in Divisions VIIIabd and subarea VII is a unit stock, based on biological characteristics. However, some movement of fish between Divisions VIIIb and VIIIc is known to occur. The effect of this movement is uncertain but is presently considered to have little influence on the estimation of the stock in the assessed area (Divisions VIIIabd and VII).

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 and 2015 that on the basis of the ICES approach to data limited stocks, catches should be no greater than 27,554 t.

4.25 Sardine (*Sardina pilchardus*) in VIIIc and IXa

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Most ***landings*** are taken by purse-seiners. Sardine catches are highest in the second semester of the year and catches are concentrated to southern Galician and Cantabrian waters. In Spain, vessels target anchovy, mackerel, sardine, and horse mackerel; in summer, part of the fleet switches to tuna fishing. In Portugal, sardine is the main target species, but chub mackerel, horse mackerel, and anchovy are also landed. Most of the landings are taken off the northern coast. Discards and slippage are uncertain, with slipping estimates only available for the Portuguese fleet but with a limited coverage in time and extent. Total catch in 2012 was 55 kt, where 100% are landings (99% purse seine and 1% other gear types)

SOURCE OF MANAGEMENT ADVICE:

The main management advisory body is ICES.

REFERENCE POINTS:

No reference points are defined for this stock.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
Quality considerations				Above average
SSB (Spawning Stock Biomass)				
	2011	2012	**2013**	

Quality consierations	✗	✗	✗	64% Below average

The biomass of age 1 and older fish has decreased since 2006. In 2012, the biomass was 64% below the long term average. Recruitment has been below the long term average since 2005. Fishing mortality fluctuated without a clear trend. In 2010-2011 fishing mortality was well above the long term average but it decreased 33% from 2011 to 2012.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of precautionary considerations taking into account current low biomass that catches in 2014 should be no more than 17 000 tonnes. Discards are considered to be negligible and all catches are assumed to be landed.

Other considerations

Management plan

ICES has evaluated a management plan as requested by the EC (ICES, 2013a). ICES concluded the plan is provisionally precautionary, causing low probabilities of unsustainable fishing mortality, when the biomass used for comparison in the harvest control rule is the B1+ in the beginning of the intermediate year.

Following the proposed EC management plan implies the TAC is set following the formula 0.36*(B1+ (2013) – lower trigger level) = (0.36*(192 - 135))) because biomass is currently between the two trigger points in the harvest rule, which results in a catches of no more than 20 520 t in 2014. Discards are considered to be negligible and all catches are assumed to be landed.

Precautionary considerations

Fishing mortality has increased and SSB has decreased in the most recent years despite advice not to increase F since 2002. F should be brought back to where it was before the start of this increase, i.e. the 2002–2007 average. However, taking into account the low biomass, below previous Bloss and the below average recruitment, fishing mortality F should be reduced further. In order that F reduces to zero at zero biomass the reduction should be the ratio between the current biomass ($B_{1+(2013)}$=192 kt) and the average biomass in this period (484 kt, ratio of 40%) to F=0.10.This results in catches of no more than 17 000 t. Discards are considered to be negligible and all catches are assumed to be landed.

Additional considerations

Management plan evaluations

ICES has evaluated a proposed management plan developed by Portugal and Spain. Since the stock has no agreed biomass reference points and given the data available, ICES was unable to define a Blim to use for this evaluation. Therefore ICES concludes the plan is provisionally precautionary, because it gives low probabilities of exceeding Floss or driving B1+ below Bloss and high probability of rapid recovery when B1+ declines to below trigger values. The proposed plan implies a relatively modest exploitation rate with mean F =0.22 which is 70% of natural mortality. Given that F slightly lower than natural mortality is a potential proxy for FMSY (DeRiso 1982), the plan results in exploitation in the lower range of candidate FMSY values.

Further exploration of sardine stock dynamics is required; for example it may be possible to draw inferences from studies of other sardine stock dynamics at low biomass. This will provide a better informed basis for determining precautionary criteria which may improve the evaluation of the current proposed plan. Additionally, alternative settings (lower target catch, higher trigger points) and catch stabilisers could be tested to improve the performance of the plan and make it more precautionary.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014. STECF notes that, as specified in the Commission Communication to the Council

concerning a consultation on Fishing Opportunities for 2014 (COM(2013) 319 final, "the Commission will also propose TACs or effort limits at levels consistent with Commission proposals for long-term plans". STECF further notes that for sardines in areas VIIIc and IXa, ICES has evaluated a management plan developed by Portugal and Spain as requested by the EC (ICES, 2013) and concluded that the plan is provisionally precautionary. STECF notes that, according to the proposed management plan, catch in 2014 should not exceed 20 520 t.

Reference

ICES. 2013. Management plan evaluation for sardine in Divisions VIIIc and IXa. Report of the ICES Advisory Committee, 2013. ICES Advice, 2013. Book 7. Section 7.3.5.1

4.26 Southern mackerel component of NE Atlantic mackerel (*Scomber scombrus*).

The stock summary and advice for the southern component of NE Atlantic mackerel given in Section 8.5 (Combined Southern, Western and North Sea spawning components).

4.27 Grey gurnard (*Eutrigla gurnardus*) in Subarea VIII and Division IXa

The stock status and advice for this stock for 2015 remains unchanged from that given for 2013 and 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES**:** Currently, grey gurnard is a bycatch species in demersal fisheries. Catches are largely discarded. Catch statistics are incomplete for several years: some countries reported no landings at all, other countries reported exceptionally high landings or unsorted landings by species. Because the species is largely discarded, landings data will not reflect the actual catches. Official landings were 175 t in 2013.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been defined for grey gurnard in the Bay of Biscay and Iberian waters.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2008–2011	
Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate stock trends and exploitation status. Landings data are not presented for this species because the landings were reported as one generic category of "gurnards" until 2010. In addition, landings data are considered only marginally informative because catches are mainly discarded.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock. There is no TAC for this species.

RECENT MANAGEMENT ADVICE: New data (landings) available do not change the perception of the stock; therefore, the same catch advised for 2013 and for 2014 is considered valid for 2015. The advice for 2013 and for 2014 was: *For this stock, the ICES approach to data-limited stocks would imply that catches should decrease by 20% in relation to the last three years' average catch. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result*.

The advice for 2015 is the same catch as advised for 2013 and for 2014 (even though its value cannot be quantified), not that a further 20% reduction in catch be implemented.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years' average catch. Because the data for catches of grey gurnard are considered highly unreliable, ICES is not in a position to quantify the result.

STECF COMMENTS: STECF agrees with the ICES advice for 2015.

STECF notes that in 2011, advice for grey gurnard was given for the Northeast Atlantic as a whole. Since 2012, biennial advice is given for three separate ecoregions: Bay of Biscay and Atlantic Iberian waters, North Sea, and Celtic Seas.

STECF notes that the stock unit definition of grey gurnard in this area is not clear and that further work is required.

4.28 Pollack (*Pollachius pollachius*) in Subarea VIII and Division IXa

FISHERIES: Pollack is mainly a bycatch species in different fisheries. In France, pollack is mainly caught in nets, and to a lesser degree in trawl and lines. In Spain, pollack is caught in small-scale fisheries with a wide variety of fishing gears (different types of lines and gillnets), and to a lesser extent with bottom trawl. Portuguese catches are mainly from a wide variety of static gear types. A UK fixed-net fishery has developed since 2006 in Division VIIIa. Fishery statistics are currently being compiled. At present, only official landings are available, which are considered to be preliminary for the purpose of stock assessment. There are concerns about the reliability of the 2008-2009 French data. Landings statistics need to be quality-assured and confirmed for the region. Official landings were 1635 t in 2013.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been defined for pollack in the Bay of Biscay and Iberian waters.

STOCK STATUS:

F (Fishing Mortality)	
	1977–2011
Qualitative evaluation	? Insufficient information

SSB (Spawning-Stock Biomass)	
	1977–2011

Qualitative evaluation	?	Insufficient information

The available information is insufficient to evaluate stock trends and exploitation status in the Bay of Biscay and Atlantic Iberian waters ecoregion. Higher landings were obtained in the 1980s than in the past two decades.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock.

The "Joint statement by the Council and the Commission" (Council of the European Union Document Doc 5232/14 PECHE 15, 13 January 2014) states:

The Council and the Commission note that the fishing opportunities regulations include a number of TACs for stocks for which there is limited information on stock status and which are of low economic importance, or are taken only as by-catches, or which show low levels of quota uptake. In these cases, the Council and the Commission consider it appropriate to constrain catches at or below the TAC levels fixed for 2014. To this end, without prejudice to the Commission's right of initiative and the Council's prerogatives under Article 293(1) TFEU, the Commission and the Council consider that it would be desirable to maintain the 2014 TAC level for the stocks listed below for the following four years.

Pollack TAC unit IX, X, CECAF 34.1.1 (EU) is included in the list of the Joint statement by the Council and the Commission. This affects pollack in Division IXa, but not pollack in Subarea VIII.

RECENT MANAGEMENT ADVICE: ICES advises on the data-limited approach but cannot quantify the resulting catches as there is no information available on discards. The implied landings should be no more than 1316 tonnes.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the last three years' average landings (2011–2013), corresponding to landings of no more than 1316 tonnes.

STECF COMMENTS: STECF agrees with the ICES advice for 2015.

STECF notes that in the absence of specific information on stock structure, the ICES ecoregions are chosen as a minimum level of disaggregation for the definition of stock units. This is an interim solution until more information is available on stock units.

4.29 Red gurnard in (*Aspitrigla cuculus*) in the Bay of Biscay and Iberian waters

STECF did not have access to any recent stock assessment information on red gurnard in the Bay of Biscay and Iberian waters. Advice from ICES on red gurnard is provided at the NE Atlantic regional level and is given in Section 8.7 of this report.

4.30 Red mullet (*Mullus surmuletus* and *Mullus barbartus*) in the Bay of Biscay and Iberian waters

STECF did not have access to any recent stock assessment information on red mullet in the Bay of Biscay and Iberian waters. Advice from ICES on red mullet is provided for Western Waters (Subareas and Divisions Vi, VIIa-c, e-k, VIII and IXa) and is given in Section 8.6 of this report.

4.31 Seabass (*Dicentrarchus labrax*) in the Bay of Biscay (Divisions VIII a, b)

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Seabass in the Bay of Biscay is mainly caught by France, accounting for more than 90% of international catches. In 2013 preliminary French total ICES estimated landings were 2 532 t and UK landings from this area are very low, usually inferior to 5 t per year. Seabass is exploited by longlines mainly from July to October, and by pelagic trawling, gillnets, and in a mixed bottom trawl fishery from November to April on pre-spawning and spawning grounds when fish aggregate. From 2000 to 2008, pelagic trawlers caught around 25% of the total catches, decreasing to 6% in 2013 because pelagic trawlers shifted their activity to the English Channel. Spain accounts for about 6% of all catches, mainly with bottom otter trawls. Discarding is thought to be low; some discards may occur due to individual landing limitations by trip, but these are not quantified. Recreational fisheries are an important part of the total removals, but these are not accurately quantified. Commercial catches with all gear types exhibit a broad age range. Catches may be strongly influenced by intermittent strong year classes and periods of poor recruitment.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a precautionary reduction of catches because of missing or non-representative data. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

Only commercial landings are available, although recreational fisheries are significant. Surveys in France in 2009–2010 estimated that the recreational fishery (angling and non-angling gears) in the Atlantic area caught 3200 t of seabass, of which 830 t were released. Around 60% (1920 t) of the

recreational catch estimate was from the Bay of Biscay, which is similar to the commercial fisheries in this area. The commercial catches have been relatively stable over the last decade.

MANAGEMENT OBJECTIVES: No specific management objectives are known to ICES, and there is no TAC for this species.

RECENT MANAGEMENT ADVICE: There are no new data available that change the perception of the stock; therefore, the advice for this fishery in 2015 is the same as the advice for 2014. The advice for 2014 was: *Based on the ICES approach to data-limited stocks, ICES advises that commercial catches should be no more than 1890 tonnes. Discards are considered as negligible, therefore, all catches are assumed to be landed. ICES recommends that implementation of 'input' controls should be promoted.*

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that total catches should decrease by 20% in relation to the average catch of the last three years (2009–2011), corresponding to commercial catches of no more than 1890 t in 2014. All commercial catches are assumed to be landed. Recreational catches cannot be quantified; therefore, total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES advice for 2015 given for the commercial fisheries for seabass in VIIIab. STECF notes however that incomplete estimates for recreational catches of seabass from France in Division VIIIab (Bay of Biscay) are of similar magnitude to the commercial catches. STECF notes that to control overall fishing mortality on the stock it would be appropriate to consider introducing some form of measures to control the recreational catch in addition to the commercial catch.

STECF notes that stock structure remains poorly known and further studies are needed. STECF further notes that there is a need to ensure adequate and representative sampling coverage of commercial fleets and recreational fisheries for this species, including the development of regional time-series of recreational fishery catch, effort, and catch composition.

4.32 Seabass (*Dicentrarchus labrax*) in Iberian waters (Divisions VIIIc and IXa)

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Seabass in Divisions VIIIc and IXa is mainly caught by Spanish and Portuguese vessels. Commercial landings represent 1046 tons in 2013. A peak of landings is observed in the early 90's and in 2013, reaching more than 1000 tons, and lowest landings (637 tons) have been observed in 2004. In 2013, in the all area, landings were equivalent between Spain and Portugal. However Landings from Portugal are only from the IXa area, while the Spanish landings are distributed equally between the two zones IXa and VIIIc. Most seabass landings come from coastal artisanal fisheries using various gears. In Division IXa 80–99% of landings are from this fisheries using mostly gillnets, trammelnets, and longline or handline. Official landings underestimate total catch to an unknown degree, since there is unregistered activity by recreational hook and line. Discarding is thought to be low. Recreational fisheries are an important part of the total removals, but these are not accurately quantified.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a precautionary reduction of catches because of missing or non-representative data. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2011–2013	
Qualitative evaluation	?	Insufficient information

Only commercial landings are available, although recreational fisheries may be significant. The commercial landings in the last two decades are variable between years without a long-term trend. No analytic assessment can be presented for this stock.

MANAGEMENT OBJECTIVES: No management objectives have been defined for this stock.

RECENT MANAGEMENT ADVICE: There are no new data available that change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: *Based on ICES approach to data-limited stocks, ICES advises that commercial catches should be no more than 598 t. All commercial catches are assumed to be landed. Recreational catches cannot be quantified; therefore, total catches cannot be calculated.*

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that total catches should decrease by 20% in relation to the average catch of the last three years (2009–2011), corresponding to commercial catches of no more than 598 tonnes in 2014. All commercial catches are assumed to be landed. Recreational catches cannot be quantified; therefore, total catches cannot be calculated.

STECF COMMENTS: STECF agrees with the ICES advice for 2015 given for the commercial fisheries for seabass in VIIIc and IXa.

STECF notes however that recreational fisheries for seabass may be significant; to control overall fishing mortality on the stock it would be appropriate to consider introducing some form of measures to control the recreational catch in addition to the commercial catch.

STECF notes that stock structure remains poorly known and further studies are needed. STECF further notes that there is a need to ensure adequate and representative sampling coverage of commercial fleets and recreational fisheries for this species, including the development of regional time-series of recreational fishery catch, effort, and catch composition.

5 RESOURCES IN ICELANDIC AND EAST GREENLAND WATERS

5.1 Cod (*Gadus morhua*) in ICES Subarea XIV and NAFO Subarea 1 (Greenland cod)

FISHERIES: Commercial fisheries for Greenland cod started along the Greenland West coast in the 1910's (inshore) and 1920's (offshore). The fishery gradually developed culminating with catch levels above 400,000 tons annually in the 1960s. The East Greenland offshore cod fishery started in the 1950's. Due to overfishing and deteriorating environmental conditions, the stock size declined and the fishery completely collapsed in the early 1990's. The 1990s stock collapse was followed by a decade of very limited fishing, with inshore catches falling below 1000 t annually and with no directed offshore fisheries taking place.

The dynamics of recent year-classes differ for inshore and offshore areas, indicating differences in environment and stock dynamics. The recruitment index of the 2009 year-class is the highest recorded in the time-series in the northern part of the survey area. A large 2005 year class is believed to be partly of offshore origin.

The offshore stock in West Greenland increased in 2013 compared to 2012 due to the appearance of a 2009 year- class in considerable numbers. The quota for the offshore component in total international fishery was 10,000 tons for 2014 as an experimental fishery. Total catch in 2013 of offshore component amounted to a total of 6,000 tons with 1,900 tons caught in West Greenland and 4,100 tons caught in East Greenland waters. Trawlers accounted for 69% of the total catch in West and East Greenland combined

The catches from the inshore component amounted to 13,236 t. in 2013 where 100% landings (73% poundnet and 27% handlines, longlines, gillnets, and other gear types). 0% discards, 0% industrial bycatch, and 0% unaccounted removals.

The TAC for the coastal fleet was set at 15,000 t in 2013. The fleet is limited by gear, vessel size, and minimum landing size (40 cm), and operates in inshore and coastal waters.

SOURCE OF MANAGEMENT ADVICE: An Analytical assessment is available up to 1992. After the stock depletion in 1992, the stock trends have been based on research survey indices. Cod in Greenland waters derives from three stock components, labelled by their spawning areas: I) an offshore Greenland spawning stock, II) inshore West Greenland fiords spawning populations, and III) Icelandic spawned cod that drift to Greenland with the Irminger Current.

REFERENCE POINTS: No reference points have been proposed by ICES for this stock.

5.1.1 Offshore cod in ICES Subarea XIV and NAFO Subarea 1 (Greenland cod)

The ICES advice for 2015 is the same as that for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014 (STECF 13-27)

STOCK STATUS:

F (Fishing Mortality)		
	2009-2011	
MSY (F_{MSY})	?	Unknown
Precautionary	?	Unknown

approach (F_{pa},F_{lim})		

SSB (Spawning-Stock Biomass)		
	2009-2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Local high densities

All information indicates that the offshore cod biomass is low compared to before the 1990s. The offshore component has been severely depleted since 1990, but has started to recover since 2005. An offshore cod directed fishery has started for the first time since 1992 with recent annual catches up to 22,000 t. Following the 2003 year-class recruitment has been low until 2009 year class which is estimated as abundant. The offshore stock in West Greenland increased in 2013 compared to the 2012 and 2011supported by the 2009 year-class.

Offshore catches in the fishery in 2013 amounted to a total of 5,988 tons with 1,884 tons caught in West Greenland and 4,104 tons caught in East Greenland

MANAGEMENT AGREEMENTS: In 2014 a new management plan was proposed for the offshore cod fishery in Greenland (2014-2016). The management plan is built on the distinction between the inshore and offshore stocks (as also recognized by ICES). However, the management plan further divides the offshore stock into a West and a South East component.

None of the management plans have been evaluated by ICES.

RECENT MANAGEMENT ADVICE:

New data (landings and surveys) available for this stock do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2013 (ICES, 2012): "*ICES advises on the basis of precautionary considerations that no offshore fishery should take place, to improve the likelihood of establishing offshore spawning stocks in West and East Greenland.***"**

PA approach

ICES advices that no fishery of offshore component should take place in 2015 to allow for rebuilding of the offshore spawning stocks in West and East Greenland. Though the stock has been slightly increasing in recent years, it is still far below any possible biomass reference points.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the offshore stock component and the advice for no offshore fishery in 2015. STECF notes that a management plan was proposed by the Government of Greenland for the offshore cod stocks for 2014-2016.

The management plan has not been evaluated by ICES.

Request for STECF opinion on the offshore cod stock in the Greenland area (ICES subarea XIV and NAFO Subarea 1)

The STECF response to the special request on the proposed Greenland cod Management plan (offshore cod stock in the Greenland area (ICES subarea XIV and NAFO Subarea 1), is given in Section 6.15 of the Report of the STECF 14-02 plenary meeting which took place in Copenhagen from 7-11 July 2014 (STECF PLEN-14-02) (https://stecf.jrc.ec.europa.eu/reports/plenary).

5.1.2 Inshore cod in ICES Subarea XIV and NAFO Subarea 1 (Greenland cod)

The ICES advice for 2015 is the same as that for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014 (STECF 13-27)

STOCK STATUS

F (Fishing Mortality)		
	2010–2012	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2010–2012	
MSY ($B_{trigger}$)	?	Above
Precautionary approach (B_{pa},B_{lim})	?	Above
Qualitative evaluation	↗	Increasing

There have been several years of steady and relatively high recruitment and the biomass estimate is increasing and has been doing so for more than ten years. Several year classes are in the catches, and the large 2009 year class has now entered the fishery. Spawning has been documented in most fjords on the west coast, with key areas in NAFO 1B and 1D. Hence the overall state of the stock is considered good and improving.

Total landings from the inshore fishery amounted to 13,236 t in 2013 which is a slight increase compared to 2012.

MANAGEMENT AGREEMENTS: Greenland and EC established an agreement on offshore fisheries valid from 2007 to 2012. A variable TAC regulation has been agreed. The agreement also provides for a transfer of unutilized quota into future years, should a rapid increase in the stock occur. None of the management plans have been evaluated by ICES.

RECENT MANAGEMENT ADVICE:

New survey and catch data available for this stock do not change the perception of the stock. Therefore, the advice for 2015 is on the same basis as the advice for 2014: *Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 12,379 t. All catches are assumed to be landed.*

Quality considerations

The recruitment gillnet survey is in most years considered a good measure of recruitment (ages 2 and 3). However, some years are either missing or have insufficient coverage. The survey does not cover the fishable adult biomass, and does not necessarily reflect adult biomass trends. Overall

landings statistics are reliable, but details such as effort are not available. Age and length frequency sampling from survey and the fishery are considered good.

The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated. The harvest control rules are expected to stabilize stock size, but they may not be suitable if the stock size is low and/or overfished.

ICES approach to data limited stocks

For this stock the biomass is estimated to have increased by 202% between the average of the three 2006, 2009, and 2010 surveys and the average of the two 2011–2012 surveys. Applying the uncertainty cap gives an increase of catches of 20% in relation to the average catch of the last three years, corresponding to catches of no more than 12,379 t in 2015. All catches are assumed to be landed.

Management agreement

There is no management plan for the inshore component of the Greenland cod.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the basis of the advice for 2015. The advised landings should be taken from inshore component only.

5.2 Cod (*Gadus morhua*) in ICES Subarea XII

STECF does not have access to any information on cod in ICES Subarea XII

5.3 Cod (*Gadus morhua*) in Division Va (Icelandic cod)

FISHERIES: Icelandic cod is primarily caught by bottom otter trawlers. Historically, the landings of bottom trawlers constituted a larger portion of the total catches than today, in some years prior to 1990 reaching 60% of the total landings. In the 1990's, the landings from bottom trawlers declined significantly and have been just above 40% of the total landings in the last decade. The share of long-lining has tripled over the last 20 years. The share of gill netting has over the same time period declined and is now only half of what it was in the 1980's. Since the size of cod caught by the gillnet fleet is generally much larger than caught by other fleets, this change in fishing pattern is likely to have caused a significant reduction in the fishing mortality of older fish.

Total catch in 2013 are estimated 212,000 t, where 212,000 t were estimated landings (45% bottom trawl, 35% longline, 10% gillnet, 5% Danish seine, and 5% hooks). Discards are known to take place (in the order of 1.4–4.3%) but cannot be fully quantified.

In recent years, misreporting has not been regarded as a major problem in the fishery of this stock. No study is though available to support that general perspective.

SOURCE OF MANAGEMENT ADVICE: The data used in the assessment are landings-at-age and two age-structured survey indices. The analytical assessment is based on landings and survey data using a forward based statistical catch-at-age model, implemented in AD model builder. The modeling setup is the same as last year. This year both the spring and the fall survey indices are used in the final assessment, last year only the spring survey was used. Landings-at-age data as well as survey indices are considered reliable.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management	$MP_{Btrigger}$	220 000 t.	Set by managers, consistent with ICES MSY framework.

plan	Harvest rate$_{MP}$	0.2	Set by managers, consistent with ICES MSY framework.
MSY framework	MSY B$_{trigger}$	220 000t.	Trigger point in HCR considered consistent with ICES MSY framework.
	F_{MSY}	Not relevant.	
Precautionary approach	B_{lim}	125 000 t.	B_{loss}
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Below possible candidate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Below possible candidate F_{pa} and F_{lim}
Management plan (F_{MGT})	✓	✓	✓	Within expected range

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MGT})	✓	✓	✓	Above trigger

The spawning stock of Icelandic cod is increasing and is higher than has been observed over the last four decades. Fishing mortality has declined significantly in the last decade and is presently at a historical low, below likely candidates for F_{pa} and F_{lim}. Year classes are estimated to have been relatively stable since 1988 but with the mean around the lower values observed in the period 1955 to 1985.

MANAGEMENT AGREEMENTS:

Since 1994, TACs for the Icelandic cod stock have been based on a 25% harvest control rule with four amendments on the catch stabilizer. In 2009 the Icelandic Government has adopted a management plan for the Icelandic cod stock for the next five fishing years based on a 20% exploitation rate. The main objective of the management plan is to ensure an increase the size of the cod stock towards the size that generates maximum sustainable yield and that the spawning stock

biomass (SSB) will with high probability (>95%) be above the 220,000 t by the year 2015. The rule is as follows:

TACy+1 == (α B4+,y + TACy)/2, where y refers to the assessment year and B4+ to biomass of 4 year and older cod and α to the harvest rate. α is set to 0.2 when SSB is higher than 220 thousand tonnes ($SSB_{TRIGGER}$) but set to α = 0.2 SSB y / $SSB_{TRIGGER}$

ICES has evaluated the plan and concludes that it is in accordance with the precautionary approach and the ICES MSY approach.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the Icelandic 2009 management plan that the TAC in the fishing year 2014/2015 should be set at 218,000 t.

Management plan

The TAC value, which is given for the calendar year (i.e. 2015), is applied in the fishery for the fishing year (September 2014 to August 2015).

Following the agreed management plan implies a TAC of 218,000 t in the fishing year 2014/2015. The management plan has been evaluated to be in conformity with ICES MSY approach.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the catch advice for fishing year 2014/2015.

5.4 Haddock (Melanogrammus aeglefinus) in Division Va (Icelandic haddock)

FISHERIES: Icelandic haddock is caught around Iceland with bottom otter trawls, Danish seine and longline. The share of different gears in the haddock catches have been varying with time, with the share of longlines and Danish seine increasing in recent years while the proportion of haddock caught in gillnets is now very small. Total landings in 2013 were 44,100 t, with 44% taken by bottom trawl, 44% by longlines, 11% by Danish seine, and 2% by other gear. The discards have been between 0.04% and 4.4% by weight since 2001, less than 2% in recent years.

For comparison the landings in 2007 were 110,000 tonnes which is the highest for over 40 years. Landings of Icelandic haddock in 2012 are estimated to have been 46,200 t.

SOURCE OF MANAGEMENT ADVICE: The assessment is based on age-disaggregated landings from 1979 to 2013 and on two survey indices (Icelandic spring and autumn groundfish surveys). The assessment does not include discards.

Discards are considered negligible and not included in the assessment.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	HCR $B_{trigger}$	45 000 t.	Stochastic simulations (Björnsson, 2013).
	H_{MSY}	0.52	Stochastic simulations (Björnsson 2013).
Precautionary Approach	B_{lim}	45 000 t.	B_{loss} (ICES, 2012).
	H_{pa}	0.46	Stochastic simulations (Björnsson, 2013).
Management plan	H_{target}	0.40	Management plan.

STOCK STATUS:

SSB increased from 2001 to 2004 after several strong year classes and was large from 2004 to 2008. Since then the spawning stock has decreased. Harvest ratio is currently estimated near H_{target} (0.4).

Recruitment was high for the year classes 1998–2003, with five strong year classes, of which the 2003 year class was very strong. The 2008–2013 year classes are all estimated to be poor.

MANAGEMENT AGREEMENTS: A management plan was introduced last year and adopted by the Icelandic government in April 2013. The plan was evaluated by ICES in March 2013 and was considered to be precautionary and in conformity with the MSY approach. .

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of a Management Plan that catches in the fishing year 2014/2015 should be no more than 30,400 t. All catches are assumed to be landed.

Management Plan

The TAC for the fishing year 2014/2015 should be no more than 0.4 times the estimated biomass of 45 cm and larger haddock at the beginning of 2015 (76,000 t), corresponding to a TAC of 30,400 t.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advised forecast catch options for fishing year 2014/2015.

5.5 Saithe (*Pollachius virens*) in Division Va (Icelandic saithe)

FISHERIES: Icelandic saithe are caught around Iceland in directed saithe fisheries as well as in mixed demersal fisheries which target cod, mainly with bottom otter trawls and at a smaller proportion with gill nets and by jigging. The fishery is regulated by TACs and minimum mesh size in fishing gears. Landings of saithe in Icelandic waters have peaked at 102,000 t in 1991, decreased to 31,000 t in 1998 and increased again to around 70,000 t in recent years.

Total landings in 2013 were 58,000 t, where 84% were caught by bottom trawl and 5% by gillnet, with jiggers and Danish seine taking the majority of the rest. 1–2% discards by numbers.

SOURCE OF MANAGEMENT ADVICE: A separable catch-age model is used to fit the catch at age data from the commercial fleets (ages 3–14, years 1980–2013) and using the Spring bottom-trawl survey index (ages 3–10, years 1985–2013) as a tuning series. The Icelandic discards monitoring program has not detected large amount of discards in the saithe fishery. Not including discards in the assessment is thus not considered to cause a significant bias in the assessment and the advice. The assessment is relatively uncertain due to fluctuations in the spring survey data and irregular changes in the fleet selectivity. The vertical distribution and migrating behaviour of saithe means that the bottom trawl survey does not produce reliable measurements of the stock. There are also indications of time-varying selectivity, so changes in the commercial catch-at-age may not reflect changes in the age distribution of the population. The combination of fluctuating spring survey data and time-varying fleet selectivity leads to high uncertainty in the estimates of current SSB and fishing mortality.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
MSY Approach	MSY $B_{trigger}$	65 000 t.	Stochastic evaluations.
	HR_{MSY}	20%	Stochastic HCR evaluation (SSB 95% of the time over B_{lim}).
Precautionary approach	B_{lim}	61 000 t.	B_{loss} as estimated in 2010.
	B_{pa}, F_{lim}, F_{pa}	Not defined.	
Management plan	HR_{MP}	20%	
	MP $B_{trigger}$	65 000 t.	

(*Last changed in*: *2013*)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above target
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning stock of Icelandic saithe has been relatively large in recent years, near the maximum from 1980 to the present, and the harvest rate has declined from 27% to 19% (fishing mortalities 0.30 to 0.22) from 2009 to 2013. The year classes 1999–2000 and 2002 were large, and recruitment since then has generally been above average.

MANAGEMENT AGREEMENTS:

In spring 2013, the Icelandic government adopted a management plan for managing the Icelandic saithe fishery. ICES has evaluated this management plan and concluded that it is in accordance with the precautionary approach and the ICES MSY framework.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the Icelandic 2013 management plan that the TAC in the fishing year 2014/2015 should be 58,000 t.

Management plan

According to the adopted management plan in 2013, the TAC for the upcoming fishing year will be the average of 0.20 times the estimated current reference biomass (B4+), which equals 296,000 t in 2014, and the previous fishing year's (2013/2014) TAC =57,000 t, implying a TAC for the 2014/2015 fishing year of 58,000 t.

Additional considerations

Information from the fishing industry

Commercial cpue from the most important fleets targeting saithe are available for 20 years or more. However, the potential for bias in commercial cpue (for example hyperstability) is a serious concern for shoaling species such as saithe. Therefore, although these indices have been explored for inclusion in the past, they were not considered in calibrating the present assessment, as they are considered unreliable as an indicator of abundance.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for fishing year 2014/2015.

5.6 Greenland halibut (*Reinhartius hippoglossoides*) in Sub-areas V, VI, XII and XIV

FISHERIES: The fishery is distributed over a vast area, but with a substantial part is taking place in a limited area west of Iceland. The fishery is mainly conducted by factory trawlers operating with demersal trawl, and to a lesser extent by gillnetters. Most of the fishery for Greenland halibut in Divisions Va, Vb and XIVb is a directed trawl fishery and only minor landings in Va by Iceland, and in XIVb by Germany and the UK come partly as bycatch from a redfish fishery. During the period 1982–1986, landings were stable at about 31,000–34,000 t. In the years 1987–1989, landings increased to about 62,000 t. This was followed by a decline to around 20,000 t in 1999. In the recent period 2000 to 2012, landings were in the range 21,000 to 32,000 t.

Total catch in 2013 was 26,923 t (96% demersal trawl and 4% gillnets/longlines). Discarding is considered to be minor (less than 1% by weight).

Landings in Icelandic waters have historically predominated the total landings in areas V+XIV, but since the mid 1990s also fisheries in XIV and Vb have developed. A smaller part of the landings and fishery relates to the Greenland EEZ part of XIVb as well as international waters on the Reykjanes Ridge.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The data are insufficient for an analytical assessment. A probabilistic (Bayesian) version of a surplus-production model was used to assess the stock. Biomass is expressed on a scale relative to B_{msy} and F relative to F_{msy}. The assessment uses biomass indices from a standardized cpue series of the Icelandic trawl fleet (1985–2013), Greenland trawl fleet (1992-2012) and Faroese trawl fleet (1995-2013), and two trawl surveys (Va: 1996–2013, XIV: 1998–2013). Discards are assumed negligible and are not included in the assessment.

REFERENCE POINTS:

Relative reference points are defined for this stock. Fishing mortality is estimated in relation to F_{MSY} and total stock biomass is estimated in relation to B_{MSY}. A possible candidate for MSY $B_{trigger}$ will be within the range of 30%–50% B_{MSY}. MSY $B_{trigger}$ values in this range have been adopted for a number of ICES and NAFO stocks.

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	0.5 B_{MSY}	B_{MSY} is implicitly estimated from surplus production model (ICES, 2007).
	F_{MSY}	Relative value.	Implicit, estimated from surplus production model (ICES, 2007). Fishing mortality values expressed relative to F_{MSY}.
	B_{lim}	0.3 B_{MSY}	Based on a fraction of B_{MSY} where production is reduced to 50% MSY.

Precautionary approach	B_{pa}	Not relevant.	Risk calculated directly.
	F_{lim}	1.7 F_{MSY}	The F that on average gives B_{lim}.
	F_{pa}	Not relevant.	Risk calculated directly.

(Last changed in 2014)

STOCK STATUS:

	Fishing pressure			
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably

	Stock size			
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity)

The assessment is indicative of stock trends, and provides relative measures of stock status. The stock has been below B_{MSY} since the early 1990s and is presently at 71% of B_{MSY}. Since the record-low biomass observed in 2004 the stock has been stable with signs of slow increase. Landings have been between 20,000 and 30,000 t for more than decade. Present fishing mortality is estimated to be 1.1 times the F_{MSY}.

MANAGEMENT AGREEMENTS:

No regional management agreement is in place, TACs are set separately for Iceland and Greenland EEZs, and the number of licenses is set separately by the Faroe Islands. In 2012 the coastal states initiated work on a common management plan for Greenland halibut in Subareas V, XII, and XIV. The plan will move in two steps; first, a gradual lowering of the total catches until biological reference points have been evaluated by ICES, and thereafter implementation of a harvest control rule in accordance with ICES MSY approach. The plan will include continuous monitoring of the resources and the requirements on information from the fishery. The plan has yet to be finalized.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings in 2015 should be no more than 25,180 t. All catches are assumed to be landed.

MSY approach

The stock is above MSY $B_{trigger}$ (50% B_{MSY}). Following the ICES MSY framework implies that the advised fishing mortality should be F_{MSY}. This corresponds to maximum catches in 2015 of less than 25,180 t, which is expected to lead to a slight improvement in stock size in 2016. This advice is associated with a 10% reduction in F and with less than 1% risk of biomass falling below B_{lim}.

Other considerations:

Management considerations:

A common management plan is presently being developed by the coastal states. The management plan will include monitoring of the effort and stock development as well as a framework for adapting future fishing according to the response of the stock, aiming at a harvest control rule that is in accordance with MSY. Since Greenland halibut is a slow-growing species, it is expected that a change in stock dynamics may take several years and this will be taken into consideration in the management plan. The intention is to have the plan fully implemented in 2015; however, a stepwise reduction in catches was initially implemented in 2013.

The stock has sustained catches between 20 000 t and 30 000 t in the past decades. It should be taken into account that Greenland halibut is a slow-growing and long-lived species and rebuilding the stock is therefore only likely to be achieved within a long time frame.

Available biological information such as tagging and genetic studies and the distribution of the fisheries suggest that Greenland halibut in Subareas XIV and V belong to the same stock entity and that a common management is therefore required.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice of landings for 2015.

5.7 Golden Redfish (*Sebastes norvegicus*) in Sub-areas V, VI, XII and XIV

FISHERIES: *S. norvegicus* are mainly taken by bottom otter trawlers in depths down to 500 m. Icelandic trawlers account for the majority of the catches from Division Va, while Faroese trawlers take most of the catches from Division Vb. In Sub-area XIV, the catches are mainly a by-catch in shrimp fisheries. In order to reduce the catches of *S. norvegicus* in Division Va, an area closure was imposed in 1994 and the quotas have been reduced in recent years.

The total catch of *S. norvegicus* in Divisions Va and Vb and in the Sub-areas VI and XIV has decreased from about 130,000 t in 1982 to about 40,000 t during the mid-1990s. Since then, the annual catches varied without a clear trend between 40,000 - 50,000 t. In recent years, around 98% of total catches were taken in Division Va. Since 2009 an increased redfish fishery has taken place in Subarea XIV. In Division Vb golden redfish is only bycatch in the saithe fishery and has decreased in recent years. S. *norvegicus* is to a certain extent caught together with "Icelandic slope S. mentella" in all areas.

Total catch of 2013 was 53,000 t, where 92% was taken by bottom trawls and 8% by other gear types. Discarding is considered minimal.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Analytical assessment using GADGET model and survey index series are the basis for advice. Landings data and length distributions of catches from Iceland, Greenland, and the Faroes; survey data by length from IS-SMB and GER(GRL)-GFS-Q4, age data from Icelandic catches and IS-SMH.

REFERENCE POINTS:

	Type	**Value**	**Technical basis**
Management plan	F_{target}	0.097	F_{MSY} (ICES, 2014b).
	$B_{trigger}$	220 kt	Safe distance above B_{lim} (ICES, 2014b).
MSY approach	F_{MSY}	0.097	Average of ages 9–19. F_{max} in the 2012 Gadget run, leading to < 1% probability of going below B_{lim}, under recruitment patterns seen since 1975 and with large assessment uncertainty (ICES, 2014b).

Precautionary approach	B_{lim}	160 kt	Lowest SSB in the 2012 Gadget run (ICES, 2014b).

(changed in 2014)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
Management plan (F_{MGT})	✗	✗	✗	Above

Stock size				
	2012	2013	**2014**	
Management plan($B_{trigger}$)	✓	✓	✓	Above
Precautionary approach (Upa)	✓	✓	✓	Above

Landings were stable from 1994 to 2011, averaging 41,000 tonnes (37,000–46,000 tonnes). In 2013 the landings increased and are estimated at 53,000 tonnes, the highest since 1990. The 1998–2003 year classes accounted for most of the catches in 2013, but the share of the 1985 and 1990 year classes has decreased to 7%. SSB in 2014 is estimated at around 60% above $B_{trigger}$ and more than twice that in 1995, when it was at its lowest. Fishing mortality has decreased considerably since the 1990s. Fishing mortality in 2010–2013 is estimated at 0.105, which is slightly higher than the target of 0.097 according to the management plan.

MANAGEMENT AGREEMENTS:

The regulation is based on TAC in Iceland and in Greenland, and through an effort regulation system in the Faroe Islands. The separation of golden redfish and Icelandic slope *S. mentella* in the quota was implemented in the 2010/2011 fishing season. The TAC in Greenland is set for redfish, with no distinction being made between S. *norvegicus* and *S. mentella*.

A harvest control rule (HCR) was evaluated by ICES in early 2014 to be in accordance with the MSY and precautionary approach. According to the HCR the advice is based on $F_{9–19}$ = 0.097 when the spawning stock is above a $B_{trigger}$ of 220,000 tonnes, but on

$$F_{9-19} = 0.097 \frac{SSB}{220}$$

when SSB < 220,000 tonnes.

No formal agreement on the management of S. *norvegicus* presently exists among the three coastal states, Greenland, Iceland, and the Faroe Islands.

RECENT MANAGEMENT ADVICE: Based on the management and assessment plan evaluated by ICES in February 2014, ICES advises that catches in 2015 should be no more than 47,300 t. All catches are assumed to be landed.

The basis for advice has changed since last year when it was based on Data Limited Stocks approach. This year the advice is based on the management plan.

Precautionary considerations

The stock is at full reproductive capacity, and it is above previously estimated Upa. There is evidence that stock size is increasing and exploitation rate has reduced.

STECF COMMENTS: STECF agrees with the ICES assessment on the state of the stock and with the advice for landings in 2015 but notes that the forecast catches for 2015 are dependent on the assumed geometric mean recruitment at age 5 in 2012, 2013 and 2014. Given the uncertainty associated with these assumptions, the forecast catches may be optimistic and to reduce the risk of a reduction in the spawning stock, managers may wish to consider setting catch a limit in 2015 well below the advised value.

STECF also notes that the European TAC for redfish in Divisions Va, b and subarea XIV is a combined TAC for redfish including all *S. norvegicus* and *S. mentella* stocks.. The European TAC in Greenland waters of V and XIV is restricted to pelagic trawls which mainly selects *S. mentella* stocks.

5.8 Beaked redfish (*Sebastes mentella*) in Division Va (Icelandic demersal stock)

The advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Review of Advice for 2014 (STECF 13-27).

The stock structure of redfish *S. mentella* in Subareas V, VI, XII and XIV, and in the NAFO Convention Area has been evaluated by ICES early 2009. The outcome is that demersal *S. mentella* in Icelandic waters ("Icelandic slope" stock in ICES Divisions Va and XIV) is to be treated as one biological stock, separated from the demersal *S. mentella* found on the continental slopes of Greenland (Division XIV) and the Faroe Islands (Vb). Regarding the latter component there is not sufficient information to allow an assessment for advice. However, Subarea XIV in Greenland waters is believed to be an important nursery area for *S. mentella* found in Icelandic waters, but data to estimate the magnitude of this contribution are not available.

FISHERIES: Most of the fishery for Icelandic slope *S. mentella* in Va is a directed bottom trawl fishery taken by bottom trawlers along the shelf and slope west, southwest, and southeast of Iceland at depths between 500 and 800 m . The proportion of Icelandic slope S. mentella catches taken by pelagic trawls 1991-2000 varied between 10 and 44% of the total landings. In 2001-2013, no pelagic fishery occurred or it was negligible except in 2003 and 2007 (see Stock Annex). In general, the pelagic fishery was mainly in the same areas as the bottom trawl fishery but usually in later months of the year. The bottom trawl catches in the third and fourth quarter of the year decreased considerable in 2001-2007 compared with earlier years but increased again in 2008-2013. The total annual catches almost doubled in the early 1990s, but have since then decreased to the level of the 1980s. The increase was mainly caused by an increased catch in Division Va. The increased catch of *S. norvegicus* in Va in 2002 and decreased catch of *S. mentella* in 2001 and 2002 is due to a joint quota for *S. norvegicus* and *S. mentella* on the shelf, and the fishing fleet has increased the proportion taken from *S. norvegicus* in most recent years. Total annual landings varied between 18,000 t and 25,000 t in 2004-2010. Total landings of demersal S. *mentella* in Icelandic waters in 2013 were about 8,761 t, 3,200 t less than in 2012.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The lack of long time-series indices of abundance prevents the determination of stock status. Information on recruitment is not available. The advice is based on survey indices and ICES approach to the Data Limited Stocks.Survey data are available from the Icelandic autumn groundfish survey in Division Va (since 2000). Cpue data are available from Icelandic trawlers in Division Va (since1986).

REFERENCE POINTS: No reference points are established.

STOCK STATUS:

F (Fishing Mortality)		
		2010–2012
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
SSB (Spawning-Stock Biomass)		
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

Available survey biomass indices show that in Division Va the biomass has gradually decreased from 2006 and is at similar level as in 2003 when it was lowest in the time series.

MANAGEMENT AGREEMENTS: There are no explicit management agreements for Icelandic slope *S. mentella*. Icelandic authorities give a joint quota for golden redfish *(S. norvegicus)* and Icelandic slope *S. mentella* in Icelandic waters. Both species are therefore treated as redfish by the Icelandic authorities. Redfish is managed under ITQ system.

RECENT MANAGEMENT ADVICE:

New data (landings and surveys) available for this stock do not change the perception of this stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2014: "*Based on the ICES approach to data-limited stocks, ICES advises that catches should be no more than 9,875* t."

ICES approach to data-limited stocks

In cases where a biomass index is available for data-limited stocks, ICES uses as harvest control rule an index-adjusted status quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock (Category 3.2), the biomass is estimated to have decreased by 10.5% between the average of 2007–2009 (three years) and the average of 2010–2011 (two years). This implies a decrease in catches of 10.5% in relation to the average catch of the last three years, corresponding to catches of no more than 12,343 t. Additionally, considering that exploitation is unknown, ICES advises that catch should decrease by a further 20% as a precautionary buffer. This results in catches of no more than 9,875 t in 2015. All catches are assumed to be landed.

Addditional considerations:

ICES has since 2009 advised that a management plan be developed and implemented for Icelandic slope beaked redfish which takes into account the uncertainties in science and the properties of the fisheries. Although there are no explicit management objectives for Icelandic slope beaked redfish, it is within the Icelandic TAC system. Until 2010/2011 Icelandic authorities set a joint quota for golden redfish and Icelandic slope beaked redfish in Icelandic waters, but now separate quotas are set for the species. ICES suggests that catches of *S. mentella* are set at 10,000 t as a starting point for the adaptive part of the management plan. ICES has previously advised that most deep-water species like redfish can only sustain low rates of exploitation, since slow-growing, long-lived species that are depleted have a long recovery period. Fisheries should only be allowed to expand when indicators have been identified and a management strategy including appropriate monitoring requirements has been decided and is implemented.

Measures to protect juvenile redfish in Subarea XIV should be continued (sorting grids in the shrimp fishery).

ICES advises that separate TACs for *S. marinus* and *S. mentella* be set in Division Va.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is probably decreasing. STECF notes that landings have decreased by 63% since 2007. STECF also notes that if the most recent (2013) catch and survey information would have been taken into account, the application of ICES approach to the Data Limited Stocks would imply catches of not more than 7280 t in 2015.

5.9 Beaked redfish (*Sebastes mentella*) in Division XIV (East Greenland demersal stock)

The stock status and advice for this stock for 2015 remains unchanged from that given for 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

The stock structure of redfish *S. mentella* in Subareas V, VI, XII and XIV, and in the NAFO Convention Area has been evaluated by ICES early 2009. The outcome is that demersal *S. mentella* in Icelandic waters ("Icelandic slope" stock in ICES Divisions Va and XIV) is to be treated as one biological stock, separated from the demersal *S. mentella* found on the continental slopes of Greenland (Division XIV) and the Faroe Islands (Vb). Regarding the latter component there is not sufficient information to allow an assessment for advice. However, Subarea XIV in Greenland waters is believed to be an important nursery area for *S. mentella* found in Icelandic waters, but data to estimate the magnitude of this contribution are not available.

FISHERIES: The fishery for S. mentella on the slopes in Division XIVb is an international fishery mainly conducted by factory trawlers operating with bottom trawl. From 2002 to 2008 S. *mentella* has mainly been caught as a valuable bycatch in the fishery for Greenland halibut. A directed fishery commenced in 2009 and catches have increased from less than 100 t to nearly 7000 t in 2010–2012.

Total catches (2013) = 6,597 t, (100% taken with bottom trawl). Discards are assumed to be negligible (less than 0.1%).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. Three survey indices (German groundfish survey, Greenland shallow water survey, and Greenland deep-water survey). The German survey is designed to estimate the biomass of cod while the Greenland deep-water survey targets Greenland halibut. Both surveys therefore do not cover the entire depth distribution of S. *mentella*. A new Greenlandic shallow water survey with better coverage regarding depth was initiated in 2008. The assessment is qualitative and as such indicative of trends only.

REFERENCE POINTS: No precautionary reference points are established.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)
2010–2012

MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation	↘	Declining

Available survey biomass indices show that the following a stable period the biomass of the demersal *S. mentella* has been declining since 2003 in Division XIVb and remains at a low level in 2013. This is mainly seen in the fishable part of the stock and mainly in the area of the fishery. No new recruits (>18 cm) are seen in the survey catches, and no juveniles are present (<18 cm). This suggests that the fishery in coming years will be based on the same cohorts. Data suggests a local overexploitation by the fishery that has caused a severe local stock decline.

MANAGEMENT AGREEMENTS: There is presently no management plan for this fishery.

RECENT MANAGEMENT ADVICE:

New data (landings and surveys) available for this stock do not change the perception of this stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2013: "*Based on the precautionary approach catches should be reduced from the current level to no more than 3,500 t.*"

PA approach

There is no change in the perception of the stock; however, the fishery has increased considerably. Since beaked redfish is a slow-growing, late-maturing, and aggregating species it is considered vulnerable to over-exploitation, the effects of which are difficult to predict. The stock structure is presently unknown and could be composed of various stock components which demands extra precaution. The German survey is less positive for 2010 whilst the Greenland deep-water survey on first inspection seems positive, but not significantly so. Hence, the recently developed fishery should not be allowed to expand beyond the catches taken in 2009. This means that catches should be no more than 1000 t. Additional information should be provided by the exploratory fishery to allow for a proper assessment of the fishable demersal S. *mentella* in Division XIVb.

The stock size is expected to decrease due to low recruitment. ICES advises that catch should be reduced by at least 50%, corresponding to catches of less than 3,500t.

Additional considerations:

Indices indicate that stock sizes are declining. The large increase in the fishery in a limited area containing large aggregations of fish occurred from 2009 to 2010 and was maintained at this level in 2011. S. *mentella* is a slow-growing, late-maturing, and aggregating species, and it is considered vulnerable to overexploitation. The effects of these biological characteristics are difficult to predict, especially as little is known on migration, stock affiliation, spawning areas, etc. The stock could therefore be composed of various stock components which demands extra precaution. Given current catches (2009–2013), a fishery conducted on a local high-density aggregation, and the fact that surveys have shown declining trends, catches should be reduced from the current level to avoid local depletion.

The stock is not yet evaluated as being a biological entity separated from the adjacent *Sebastes mentella* stocks. Until this has been clarified, demersal *S. mentella* on the East Greenland shelf is assessed as a separate biological unit.

Management considerations

The recently developed directed redfish fishery (since 2009) should be reduced from the current level until stock structure and the impact of the fishery on the biomass is better understood. The rate of reduction should be re-evaluated to allow further decrease if the stock trend continues to decline.

This is the third year advice is given separately for *S. mentella* in East Greenland. Formerly, the advice of demersal S. *mentella* was provided for all demersal *S. mentella* in Subareas XIV and V. A TAC of 6000 t for demersal redfish in Division XIVb was set by Greenland in 2010. The TAC for 2011 -2014 was set at 8500 t demersal redfish on the basis of a 70:30 *S. mentella:S. norvegicus* ratio obtained from one single sample from the commercial fishery, thus intending to end up with 6000 t S. mentella and 2500 t *S. norvegicus*. The fishery is a mixed fishery for *S. mentella* and *S. norvegicus*. Survey catches suggest that at least 80% are S. mentella. The state of the *S. marinus* stock should therefore be considered in the management of this fishery.

The population structure of demersal *S. mentella* in Division XIVb is uncertain and the separate advice for S. mentella in East Greenland is considered a pragmatic solution to provide advice for a new fishery. The stock structure of demersal *S. mentella* is being investigated and results should be available in 2013.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and most probably decreasing. STECF notes that directed fishery started in 2009 when according to biomass indices the stock has already declined. STECF proposes to consider closing the directed fishery of this stock in order to avoid the risk of stock collapse.

5.10 Beaked pelagic redfish (*Sebastes mentella*) in ICES areas Va, XII and XIV and NAFO Sub-areas 1-2

The "Workshop on Redfish Stock Structure" (WKREDS, 22–23 January 2009, Copenhagen, Denmark; ICES 2009) reviewed the stock structure of *Sebastes mentella* in the Irminger Sea and adjacent waters. ACOM concluded, based on the outcome of the WKREDS meeting, that there are three biological stocks of *S. mentella*:

- a 'Deep Pelagic' stock (NAFO 1–2, ICES V, XII, XIV >500 m) – primarily pelagic habitats, and includes demersal habitats west of the Faroe Islands;
- a 'Shallow Pelagic' stock (NAFO 1–2, ICES V, XII, XIV <500 m) – extends to ICES I and II, but primarily pelagic habitats, and includes demersal habitats east of the Faroe Islands;
- an 'Icelandic Slope' stock (ICES Va, XIV) – primarily demersal habitats.

Based on this new stock identification information, ICES recommends three management units that are geographic proxies for biological stocks that were partly defined by depth and whose boundaries are based on the spatial pattern of the fishery to minimize mixed-stock catches:

- Management unit in the northeast Irminger Sea: ICES Division Va and Subareas XII and XIV.
- Management unit in the southwest Irminger Sea: NAFO Areas 1 and 2, ICES Division Vb and Subareas XII and XIV.
- Management unit on the Icelandic slope: ICES Division Va and Subarea XIV, and to the north and east of the boundary proposed in the management unit in the northeast Irminger Sea.

5.10.1 Beaked pelagic redfish (*Sebastes mentella*), management unit in the northeast Irminger Sea: ICES Division Va and Subareas XII and XIV (formally beaked redfish (Sebastes mentella) in Subareas V, XII, XIV and NAFO Subareas 1+2, deep pelagic stock > 500 m)

FISHERIES: The fishery started around 1991–1992 when the commercial fleet of the shallow pelagic redfish moved into deeper waters. Since 1997, the main fishing season occurred from late April to August in the so-called northwest fishing area near the Greenland and Icelandic EEZ and within the Icelandic EEZ, i.e. in the area east of 32°W and north of 61°N. The trawlers participating in this fishery use large pelagic trawls (*Gloria*-type) with vertical openings of 80–150 m. The vessels have operated at a depth range of 600 to 950 m in 1998–2008. Discarding is at present not considered to be significant in this fishery. The deep pelagic fishery in the Irminger Sea only exploits the mature part of the stock. Nursery areas for the stock are found at the continental slope off East Greenland. Technical conservation measures such as mandatory sorting grids in the shrimp fishery that have been in place for several years should be continued in order to protect the juvenile redfish.

Landings of the deep pelagic *S. mentella* stock have declined from 139,000t in 1996 to 30,000 t in 2008. In 2009, this fishery was subject to a NEAFC TAC of 46,000 t, which was given for both shallow and deep stocks. Total catches of 2013 were 45,600 t, all landings (100% pelagic trawl). No discards, industrial by-catch, or unaccounted removals.

SOURCE OF MANAGEMENT ADVICE:

Scientific advice is provided by ICES. The main management organisation concerned with pelagic redfish in the Irminger Sea is NEAFC. Survey indices, catches, CPUE and biological data are available for the stock, but the assessment is mainly based on surveys. The quality of the trawl biomass estimate from the international trawl-acoustic surveys since 1999 cannot be verified as the data series is relatively short and the survey is only conducted every second year. Therefore, the abundance estimates by the trawl-method must only be considered as a rough attempt to measure the abundance of the deep pelagic stock. It is not known to what extent CPUE reflect changes in the stock status of deep pelagic *S. mentella* stock. The fishery targets pelagic aggregating fish. Therefore, stable or increasing CPUEs are not considered to reflect the stock status reliably, but decreasing CPUEs likely indicate a decreasing stock.

MANAGEMENT AGREEMENT: There are no explicit management objectives for this stock.

REFERENCE POINTS: Precautionary reference points are not defined for this stock.

STOCK STATUS:

	Fishing pressure	
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
	2012–2014	
MSY ($B_{trigger}$)	?	Unknown

Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	●	Decreasing

Trawl survey estimates in 2009–2013 are lower than the average for 1999–2003, with the 2013 estimates being the lowest observed. These indices in combination with a marked decrease in landings since 2004 suggest that the stock has been reduced in the past decade. The exploitation rate for this stock is unknown.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of precautionary considerations that catches in 2015 of deep pelagic *S. mentella* be significantly reduced since indices from surveys and the fishery suggest that the stock has declined substantial prior to 2005 and continues to decline.

Precautionary approach

The stock is considered to have decreased over the last decade while the exploitation status is unknown. ICES recommends that catches of deep pelagic *S. mentella* be significantly reduced since indices from surveys and the fishery suggest that the stock has been declining rapidly over the last decades. ICES has previously advised that most deep-water species like redfish due to their biological characteristics (slow-growing, late-maturing, and schooling behaviour) can only sustain low rates of exploitation, and have a long recovery period after the depletion.

ICES is not yet able to advise on a harvest control rule that ensures a maximum sustainable yield, but has offered options for the harvest from this stock which are considered precautionary in the intermediate period until more data are available (ICES, 2014c). All options indicate a significant reduction from recent catches in 2015. None of the catch options (Table 2.2.3.2.2 in ICES, 2014b) are precautionary and only options with catch below 10,000 t have a more than 50% probability of giving increasing biomass. Based on these considerations only catch options under 10,000 t should be considered for 2015.

Additional considerations

Management considerations

ICES is concerned about the lack of formally agreed management and TAC allocation schemes. Although most nations conducting fisheries have agreed on management measures to reduce catches stepwise over the next three years, the total quotas that have been set are insufficient to constrain catches. This increases the risk of overexploitation. The autonomous quotas that have been set are insufficient to constrain catches, even though ICES acknowledges that some parties have agreed on a step-wise reduction of catches.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should be significantly reduced.

STECF also notes that although ICES is not yet able to advise on a harvest control rule that ensures a maximum sustainable yield, it has offered a few options for the harvest from this stock which are considered precautionary in the intermediate period until more data are available. STECF agrees that only catch options under 10,000 t should be considered for 2015.

5.10.2 Beaked pelagic redfish (*Sebastes mentella*) management unit in the southwest Irminger Sea: NAFO Areas 1 and 2, ICES Division Vb and Subareas XII and XIV (formally beaked

redfish (Sebastes mentella) in Subareas V, XII, XIV and NAFO Subareas 1+2, shallow pelagic stock < 500 m)

FISHERIES: Russian trawlers started fishing on the shallow pelagic *S. mentella* stock in 1982 and covered wide areas of the Irminger Sea. Vessels from other nations soon joined this fishery. The main fishing area in the last decade has been south and southeast of Cape Farwell, Greenland, the so-called southwestern area (south of 60°N and west of about 32°W), and the area is almost entirely shallower than 500 m. Since 2000, the southwestern fishing ground extended also into the NAFO Convention Area, but in later years the fishing area has been limited to the border area between NAFO and ICES south of Greenland. Catches have in parallel with this shrinkage declined substantially. In the period 1982–1992, the fishery was carried out mainly from April to August but since then the fishery has been conducted from July-October. The trawlers participating in this fishery use large pelagic trawls (*Gloria*-type) with vertical openings of 80–150 m.

The shallow pelagic stock fishery in the Irminger Sea only exploits the mature part of the stock. Nursery areas for the stock are found at the continental slope off East Greenland. Technical conservation measures such as mandatory sorting grids in the shrimp fishery that have been in place for several years should be continued in order to protect the juvenile redfish.

Landings of the shallow pelagic *S. mentella* stock has declined from 100,000t in 1993 to 2,000 t in 2008. In 2013, this fishery was subject to a TAC (sum of all quotas) of 48,000 t, which was given for both shallow and deep stocks. Totalcatch from shallow pelagick sock was 1,527 t in 2013, where 100% are landings (100% pelagic trawl). No discards, industrial bycatch, or unaccounted removals.

SOURCE OF MANAGEMENT ADVICE: Scientific advice is provided by ICES. The main management organisation concerned with pelagic redfish in the Irminger Sea is NEAFC.

Survey indices, catches, CPUE and biological data are available for the stock, but the assessment is mainly based on surveys. ICES again had difficulties in obtaining landings data from some ICES' member countries. In spite of best efforts, there is a need for a special action through NEAFC and NAFO to provide ICES in time with all information that might lead to more reliable catch statistics. *Furthermore, ICES recommends that all nations should report depth information in accordance with the NEAFC logbook format.*

MANAGEMENT AGREEMENT: There are no explicit management objectives for this stock.

REFERENCE POINTS: Precautionary reference points are not defined for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown

Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation	✗	Stable at very low

The most recent survey was conducted in June/July 2013. Since 1994, the results of the acoustic survey show a drastic decreasing trend within the deep scattering layer (DSL) from 2.2 million t to 91,000 t in 2013. With the trawl method within the DSL (350-500 m) the biomass was estimated 200,000 t, significantly below the 361,000 t of 2011. The next international acoustic redfish survey will be conducted in June/July 2015. The exploitation rate for this stock is unknown.

The lack of accurate fisheries and survey data (especially for depths within the deep-scattering layer) and recruitment indices prevents precise determination of stock status. ICES is concerned about the lack of agreed management and TAC allocation schemes. This increases the risk of over-exploitation. The autonomous quotas that have been set are insufficient to constrain catches.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the precautionary approach that no directed fishery should be conducted in 2015 and bycatch of this stock in non-directed fisheries should be kept as low as possible.

Precautionary approach

ICES advises on the basis of precautionary considerations that no directed fisheryshould be conducted in 2015 and bycatch of this stock in non-directed fisheries should be kept as low as possible. A recovery plan should be developed.

The acoustic survey biomass index shows that the stock has declined to 5% of that observed in the early 1990s and the exploitation status is unknown. The stock is considered to be vulnerable to overexploitation because of its biological characteristics (slow-growing, late-maturing, and schooling behaviour).

Management considerations

ICES is concerned about the lack of agreed management and TAC allocation schemes. This increases the risk of over-exploitation. The autonomous quotas that have been set are insufficient to constrain catches.

ICES has advised that an adaptive management plan be implemented and ICES provided a list of potential elements of such a management plan. The main management organization concerned with pelagic redfish in the Irminger Sea – NEAFC – has further requested ICES to specify these elements and also to estimate possible candidates for reference points. However, ICES has not yet been able to address this issue.

ICES has previously advised that most deep-water species like redfish can only sustain low rates of exploitation, since slow-growing, long-lived species that are depleted have a long recovery period. Fisheries should only be allowed to expand when indicators have been identified and a management strategy including appropriate monitoring requirements has been decided and is implemented. ICES therefore, stresses the need to develop and implement a recovery plan which takes into account the uncertainties in science and the properties of the fisheries.

The relationship of the shallow pelagic component with S. mentella from the Greenlandic shelf remains unclear.

STECF COMMENTS:

STECF agrees with the ICES assessment of the state of the stock and the advice that on the basis of the precautionary approach, no directed fishery should be conducted in 2015 and bycatch of this stock in non-directed fisheries should be kept as low as possible.

STECF notes that ICES has had difficulty in obtaining landings data from some ICES' member countries and that there is a need for a special action through NEAFC and NAFO to provide ICES with timely information that might lead to more reliable catch statistics. STECF also agrees with the ICES recommendation that all nations should report depth information in accordance with the NEAFC logbook format.

5.11 Icelandic summer-spawning herring (*Clupea harengus*) Division Va

FISHERIES: Icelandic summer-spawning herring are caught with purse seines and mid-water trawls. The catches increased rapidly in the early 1960s due to the development of the purse-seine fishery off the southern coast of Iceland. This resulted in a rapidly increasing exploitation rate until the stock collapsed in the late 1960s. A fishing ban was enforced during 1972-1975. The catches have since increased gradually to over 100,000 t. Formerly the fleet consisted of multi-purpose vessels, mostly under 300 GRT, operating purse-seines and driftnets. In recent years, larger vessels (up to 1500 GRT) have entered the fishery. These are a combination of purse-seiners and pelagic trawlers operating in the herring, capelin, and blue whiting fisheries. Since the 1997/1998 fishing season, there has been a fishery for herring both to the west and east of Iceland, which is unusual compared to earlier years when the fishable stock was only found south and east of Iceland. Pelagic trawl fisheries were introduced in 1997/98 and have since then contributed with approximately 20-60% of the catches, but with much less contribution in recent two years (<5%). By-catch in the herring fishery is normally insignificant as the fishing season is during the over-wintering period when the herring is in large dense schools. Until the autumn 1990, the herring fishery took place during the last three months of the calendar year. During 1990-2008, the autumn fishery continued until January or early February of the following year, and has started in September/October since 1994. In 2003, the season was further extended to the end of April, and in the summers of 2002 and 2003, an experimental fishery for spawning herring with a catch of about 5,000 t each year was conducted at the south coast. The number of vessels participating in the fishery has shown a decreasing trend in the 2000s, The Icelandic TACs for herring apply from 1 September to 1 May the following year. The catch is normally taken from September to February.

Total catch of 2013/2014 season was 72,000 t, where 90% was directed fishery (93% purse-seine, 6% pelagic trawls, and 1% gillnets) and 10% industrial bycatch (in mackerel fishery with pelagic trawls). There were no discards or unaccounted removals.

SOURCE OF MANAGEMENT ADVICE: The data used in the assessment are catch-at-age (from 1990 onwards) and one age-structured acoustic survey index, based on a survey conducted since 1974 in October-December and/or January. In addition to the acoustic survey aimed at the fishable part of the stock, there have been occasionally acoustic surveys off the NW, N, and NE coast of Iceland aimed to estimate the year-class strength of the juveniles. This survey has not taken place since 2003, but was partly resurrected in January 2009. The results of these measurements were normally not used in the assessment directly even if the year-class indices derived from the survey have shown a significant relationship to recruitment of the stock. The discards are assumed to be negligible and not included in assessment.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***

MSY Approach	MSY $B_{trigger}$	300 000 t	B_{pa}.
	F_{MSY}	0.22	HCS model for simulated harvest rules.
Precautionary Approach	B_{lim}	200 000 t	SSB with a high probability of impaired recruitment.
	B_{pa}	300 000 t	$B_{pa} = B_{lim}\, e^{1.645\sigma}$, where $\sigma = 0.25$.
	F_{lim}	Not defined	
	F_{pa}	0.22	$F_{pa} = F_{0.1} = 0.22$ (based on a weighted average) and used as a target.

(unchanged since: 2011)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity

The spawning stock biomass has been declining until 2011, likely related to the *Ichthyophonus* infection in recent years. Since then SSB has increased and is above the reference points. The infection mortality is probably less than anticipated in recent assessments. Strong year classes, which show no signs of infection, are entering the fishable stock and currently infection mortality is observed to be zero. After increasing in 2009-20112 the fishing mortality decreased again in 2013 and is currently below F_{MSY}.

MANAGEMENT AGREEMENTS:

There is no formal management plan for this stock. For more than 20 years, the practice has been to manage fisheries at $F = F_{0.1}$ (= 0.22) and this target is considered to be consistent with MSY approach.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches in the fishing season 2014/2015 should be no more than 83,000 t. All catches are assumed to be landed.

MSY approach

Following the ICES MSY approach implies fishing mortality at F_{MSY} = 0.22, resulting in catches of no more than 83,000 t in 2014/2015. This is expected to lead to an SSB of 420,000 t in 2015. All catches are assumed to be landed.

Other considerations

Management considerations

It is unknown how long the current *Ichthyophonus* outbreak will be observed in the stock. Similar outbreaks in other herring stocks have lasted from 1 to 3 years. Analysis based on all available data show a significant infection mortality in 2009–2010. However, despite a high continuing prevalence of infection after that there are indications that the mortality due to infection was probably insignificant during 2011–2014.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

5.12 Capelin (*Mallotus villosus*) in Subareas V and XIV and Division IIa west of 5°W (Iceland-East Greenland-Jan Mayen area)

FISHERIES: In the mid-1960s, purse seine fishery began on capelin. During its first 8 years, the fishery was conducted in February and March on schools of pre-spawning fish on or close to the spawning grounds south and west of Iceland. In January 1973, a successful capelin fishery began in deep waters near the shelf break east of Iceland. In July 1976, a summer capelin fishery began in the Iceland Sea. This fishery became multinational with vessels from Iceland, Norway, the Faroes and Denmark. The fishery is conducted in all years in July-March except in periods of low stock size. Over the years, the fishery has been closed during April-late June and the season has started in late June/August or later, depending on the state of the stock. In recent years, the fishery for capelin has changed from being mostly an industrial fishery to being mostly for human consumption. This is largely because of the low abundance and low TACs.

The fishery in recent years has largely been confined to the period January–March, which coincides with the last three months of the capelin lifespan. In 2011 a summer fishery took place, for the first time since 2004. No summer capelin fishery took place in either 2012 or 2013. Only a limited autumn fishery took place in 2012 and no autumn fishery took place in 2013.

Total catch (winter fishery in 2013/14season) was 142,000 t, where 142,000 t were estimated landings (85% purse-seine, 15% pelagic trawl). Discards are negligible.

SOURCE OF MANAGEMENT ADVICE: The basis for stock assessment and short-term forecasts are acoustic surveys and catch-at-age information.

REFERENCE POINTS:

Reference points have not been defined for this stock. An escapement target of 400,000 t can be considered as preliminary precautionary. However, this should be evaluated.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Undefined
Precautionary approach (F_{pa},F_{lim})	?	Undefined

Qualitative evaluation		Stable

Stock size		
	2012–2014	
MSY ($B_{trigger}$)		Undefined
Precautionary approach (B_{pa},B_{lim})		Undefined
Qualitative evaluation		Stable near average

The maturing component of the stock in autumn 2013 was estimated to be 603,000 t by the Icelandic annual acoustic autumn survey that took place in September–October 2013. It is estimated that 424,000 t spawned in March 2014, which is slightly above the 400,000 t escapement threshold. The spawning stock in 2015 will consist of fish from the 2012 year class and the part of the 2011 year class that did not spawn in 2014. The autumn acoustic survey estimate of these year classes is close to the long-term average.

MANAGEMENT AGREEMENTS:

A two-step management plan has been agreed between Iceland, Greenland, and Norway, which aims at a spawning-stock biomass at minimum 400 000 t by the end of the fishing season. The first step in this plan is to set a preliminary TAC based on the results of an acoustic survey carried out to evaluate the immature (age 1 and most of age 2) part of the capelin stock about a year before it enters the fishable stock. The initial quota is set at 2/3 of the preliminary TAC, calculated on the condition that 400, 000 t of the SSB should be left for spawning. The second step is based on the results of another survey conducted during the fishing season for the same year classes. This result is used to revise the TAC, still based on the condition that 400,000 t of the SSB should be left for spawning.

Since 1980 the TAC has been set in accordance with this 400,000 t SSB escapement strategy management plan. In June 1989 Greenland, Iceland and Norway signed an agreement on the division of the TAC between the parties involved in the fishery. This agreement has been revised several times since then, most recently in 2003.

ICES has not evaluated the management plan.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of precautionary considerations that the initial quota be set at 50% of the predicted quota, implying an initial quota of 225,000 t. The final quota should be revised based on in-season survey information in winter 2015. All catches are assumed to be landed.

Precautionary approach

The assessment and short-term predictions currently used are not accepted methods because the natural mortality applied is considered to be too low. Therefore, until additional survey measurements on the size of the 2012 year class become available the initial quota should be set significantly lower than two thirds of the predicted quota in the management agreement. It is recommended that the initial quota be set at 50% of the predicted quota, implying an initial quota of 225,000 t.

Management plan

The fishery is managed according to a two-step management plan which requires a spawning-stock biomass of no less than 400,000 t by the end of the fishing season (mid- to late March). The first step in this plan is to set a preliminary TAC, based on the results of an acoustic survey carried out to evaluate the immature 1-group and immature part of the 2-group in the autumn (October–November), almost a year before the fishing season starts. Under the management plan the initial quota is set at two thirds of the predicted TAC, calculated on the condition that 400,000 t of the SSB should be left for spawning. The second step is based on the results of another survey conducted during the fishing season for the same year classes. This result is used to revise the TAC, still based on the condition that 400,000 t of the SSB should be left for spawning. The intention is that the TAC comprises only mature fish ,

Additional considerations

Management considerations

Historically, the fishing season for capelin begins in the period from late June to July/August. The availability of plankton is then at its highest and the fishable stock of capelin feeds very actively over large areas north of Iceland between Greenland and Jan Mayen, increasing rapidly in size, weight, and fatness.

Results from the summer and autumn surveys often show mixing of juveniles and adult capelin. In Icelandic waters, only purse-seine is allowed in areas where such conditions are likely to protect juveniles (see regulations), but in Greenlandic waters purse-seine and pelagic trawl are both allowed. The pelagic trawls used in the capelin fishery are very large and filter enormous volumes of seawater during normal operation. Einarsson *et al.* (2007) shows that these trawls only retain about 20% of the capelin passing through the opening of the trawl. At present it is not known what effect this filtering of the schools has on mortality but it seems reasonable to assume it is considerable, especially if the same schools are filtered (passed through) repeatedly. Therefore, as a precautionary measure to protect the juveniles, all fishing with pelagic trawl has been banned in the Icelandic waters where juveniles are generally found, either separately or mixed with the adults. This measure should also be considered in other areas where juvenile capelin occur, i.e. East Greenland.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014/2015.

STECF notes that according to the two-step management plan the initial quota would have been 2/3 of predicted TAC implying 300,000 t but ICES has advised on precautionary considerations that initial quota should be 50% of predicted TAC. STECF agrees with this precautionary approach. STECF assumes that the final quota should be revised based on in-season survey information in winter 2015.

STECF reiterates that the methods currently used to estimate future escapement provide conflicting and uncertain results, which in turn, compromise the ability to provide reliable advice on fishing opportunities. STECF considers that as long as the advice on fishing opportunities for Icelandic capelin continue to be decided based on an escapement strategy for capelin, alternative methods that are more robust to the variability in input data need to be developed. STECF suggests that the parties involved in providing the advice on Icelandic Capelin be requested to investigate whether alternative methods can be developed to ensure that future advice on fishing opportunities is more robust to uncertainty.

6 RESOURCES IN THE BARENTS AND NORWEGIAN SEAS

6.1 Northern Shrimp (*Pandalus borealis*) in Sub-areas I (Barents Sea) and & IIb (Svalbard Waters)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The fisheries for Northern shrimp in Sub-areas I & II (Barents Sea & Svalbard are**a**) are among the largest shrimp fisheries in the North east Atlantic. Norwegian and Russian vessels exploit the stock over the entire resource area, while vessels from other nations are restricted to the Svalbard fishery zone. No overall TAC has been established for this stock, and the fishery is partly regulated by effort control, licensing, and a partial TAC (Russian zone only). Bycatch is constrained by mandatory sorting grids and by temporary closures of areas where high bycatch occurs of juvenile cod, haddock, Greenland halibut, redfish, or small shrimp (<15 mm). The minimum mesh size is 35 mm. Norway and Russia have taken the majority of the landings in the past. In the early 1980s total landings were above 100,000 t, but have since declined. Reported landings for all countries increased between 1995 (25,000 t) and 2000 (83,000 t), but have since decreased: 60,000 t in 2002, around 40 000 t in 2003-2005, around 30 000 t in 2011 and 26,000 t in 2012. There are no reported Russian landings in 2006 and since 2009.

SOURCE OF MANAGEMENT ADVICE: This stock is currently managed jointly by Norway and Russia. ICES is providing biological advice for management of this stock.

REFERENCE POINTS:

	Type	Value	Technical basis
MSY Approach	MSY $B_{trigger}$	0.5 of B_{MSY*}	50% of B_{MSY} (10^{th} percentile of the B_{MSY} estimate); relative value
	F_{MSY}	*	Resulting from the production model.
Precautionary approach	B_{lim}	0.3 of B_{MSY*}	30% of B_{MSY} (production reduced to 50% MSY); relative value
	B_{pa}	Not defined	Not needed: Risk of transgressing limits are directly estimated
	F_{lim}	1.7 of F_{MSY*}	$1.7F_{MSY}$ (the F that drives the stock to B_{lim}); relative value
	F_{pa}	Not defined	Not needed: Risk of transgressing limits are directly estimated

* Fishing mortality is estimated in relation to F_{MSY} and total stock biomass is estimated in relation to B_{MSY}.

STOCK STATUS:

F (Fishing Mortality)				
	2009	2010	**2011**	
MSY (F_{MSY})	✓	✓	✓	Below target
Precautionary approach (F_{lim})	✓	✓	✓	Harvested sustainably

SSB (Spawning-Stock Biomass)				
	2010	2011	**2012**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{lim})	✓	✓	✓	Full reproductive capacity

The assessment is considered indicative of stock trends, and provides relative measures of stock status rather than absolute. Throughout the history of the fishery, estimates of stock biomass have been above $B_{trigger}$ and fishing mortality below FMSY. The estimated risk of falling below Btrigger and Blim or of exceeding FMSY by the end of 2012 is less than 1%. Recruitment indices showed no major changes in the period 2004–2012.

RECENT MANAGEMENT ADVICE: ICES advises that catches of 60 000 tonnes in 2013 will maintain the stock at the current high biomass.

Other considerations

MSY approach

The stock is well above MSY Btrigger and F is well below F_{MSY}. Catches of 60 000 t in 2013 will maintain the stock at current high biomass.

PA approach

There is a low risk in 2013 of the stock falling below Blim or of the fishing mortality rate exceeding F_{lim} at catch options up to 90 000 t.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that catches of 60 000 tonnes in 2013 will maintain the stock at the current high biomass.

STECF notes that there is no TAC set for *Pandalus borealis* in this area.

6.2 Cod (*Gadus morhua*) in area I and II (North East Arctic cod)

FISHERIES: Northeast arctic cod is exploited predominantly by Norway and Russia with smaller landings by countries including the UK, the Faroe Islands, Iceland, Greenland, France, Spain and Germany. The fishery for North east Arctic cod is conducted both by an international trawler fleet operating in offshore waters and by vessels using gillnets, long-lines, hand-lines and Danish seine operating both offshore and in the coastal areas. Cod is a target species caught in a mixed fishery together with haddock and saithe. In coastal areas, Northeast Arctic cod and coastal cod are caught in the same fishery during parts of the year. Redfish (both *Sebastes mentella* and *S. marinus*) are caught as bycatch in the cod fishery.

From a level of about 900,000 t in the mid-1970s, landings declined steadily to around 300,000 t in 1983-1985. Landings increased to above 500,000 t in 1987 before dropping to 212,000 t in 1990, the lowest level recorded in the post-war period. The landings increased rapidly from 1991 onwards, stabilised around 750,000 t in 1994-1997 but decreased to about 414,000 t in 2000. The landings in 2004 and 2005 are estimated to be to 606,000 t and 641,000 t. In 2006, the landings were estimated to 538,000 t, 487,000 t in 2007, 464,000 t in 2008, 523,000 t in 2009 and 610 000 t in 2010. The total landings in 2011 were 720,000 t (70% demersal trawls and 30 % other gear types). Total catches in 2012 were 728,000 t (70% demersal trawls and 30% other gear types), all of which were landed. In 2013, the total landings increased to around 966,000 t (70% demersal trawls and 30% other gear types).

Under-reporting of landings has been an important issue for this stock. Two sets of estimates of non-reported landings (IUU) for the period 2002–2007 were available, ranging from 41,000–166,000 t and 9,000–41,000 t. ICES does not have a basis on which to choose one estimate over the other. The series with 41,000 t – 166,000 t unallocated landings was taken forward in the calculations because this is the same method as the one used last year. The estimates of unreported landings were however reduced considerably from 2006 to 2008 and for 2009-2013 the estimate of unreported landings is close to zero.

In addition to quotas, fisheries are regulated by mesh size limitations, a minimum catching size, a maximum bycatch of undersized fish, maximum bycatch of non-target species, closure of areas with high densities of juveniles, and other seasonal and area restrictions. Since January 1997, sorting grids have been mandatory for the trawl fisheries in most of the Barents Sea and Svalbard area. Discarding is illegal in Norway and Russia. Data on discarding are scarce, but attempts to obtain better quantification continue.

From 1 January 2011, the technical regulations for the demersal fisheries were harmonized so that they are now the same in the Norwegian and Russian EEZs. From 2011 onwards, the minimum mesh size for bottom trawl fisheries for cod and haddock is 130 mm for the entire Barents Sea (before 2011 the minimum mesh size was 135 mm in the Norwegian EEZ and 125 mm in the Russian EEZ). The minimum size is now 44 cm for cod (previously 47 in the Norwegian and 42 cm in the Russian EEZ). The maximum allowable percentage of fish below the minimum size is 15% by number of cod, haddock, and saithe combined in the Norwegian EEZ, and 15% by number of cod and haddock combined in the Russian EEZ. Previously, the maximum percentage was 15% for each species (cod and haddock) in the Russian EEZ.

The fisheries are controlled by inspections of the trawler fleet at sea, i.e. by a requirement to report to catch control points when entering and leaving the EEZs and by VMS satellite tracking for some fleets.

SOURCE OF MANAGEMENT ADVICE: ICES is providing advice for management of this stock. The advice is based on analysis of catch-at-age data, using one commercial CPUE series and three survey series. Estimates of cannibalism are included in the natural mortality. Discards are considered negligible.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management	SSB_{MP}	460 000 t.	B_{pa}, TAC linearly reduced from F_{pa} at SSB = B_{pa} to zero at SSB = 0.
Plan	F_{MP}	0.40	$F_{pa,}$ average TAC for the coming three years based on F_{pa}.
MSY	MSY $B_{trigger}$	460 000 t.	B_{pa}, and trigger point in HCR.
Approach	F_{MSY}	0.40	Long-term simulations.

Precautionary Approach	B_{lim}	220 000 t.	Change point regression
	B_{pa}	460 000 t.	The lowest SSB estimate having >90% probability of remaining above B_{lim}.
	F_{lim}	0.74	F corresponding to an equilibrium stock = B_{lim}
	F_{pa}	0.40	The highest F estimate having >90% probability of remaining below F_{lim}.

(Last changed 2012)

MANAGEMENT AGREEMENTS: A joint Norwegian and Russian scientific advisory body currently manages this stock. The fisheries are regulated according to bilateral agreements between Russia and Norway. A management plan has been implemented since 2004.

At the 38th meeting of the Joint Russian–Norwegian Fisheries Commission (JRNFC) in November 2009, the previously used management plan was amended (marked in bold) and currently states:

"The Parties agreed that the management strategies for cod and haddock should take into account the following:

conditions for high long-term yield from the stocks

achievement of year-to-year stability in TACs

full utilization of all available information on stock development

On this basis, the Parties determined the following decision rules for setting the annual fishing quota (TAC) for Northeast Arctic cod (NEA cod):

estimate the average TAC level for the coming 3 years based on F_{pa}. TAC for the next year will be set to this level as a starting value for the 3-year period.

the year after, the TAC calculation for the next 3 years is repeated based on the updated information about the stock development, however the TAC should not be changed by more than +/- 10% compared with the previous year's TAC. ***If the TAC, by following such a rule, corresponds to a fishing mortality (F) lower than 0.30 the TAC should be increased to a level corresponding to a fishing mortality of 0.30.***

if the spawning stock falls below B_{pa}, the procedure for establishing TAC should be based on a fishing mortality that is linearly reduced from F_{pa} at B_{pa}, to F= 0 at SSB equal to zero. At SSB-levels below B_{pa} in any of the operational years (current year, a year before and 3 years of prediction) there should be no limitations on the year-to-year variations in TAC[1].

The plan was evaluated in 2010 and ICES considers that it is to be in accordance with the precautionary approach and not in contradiction to the MSY framework. At the 2010 meeting of the Joint Russian–Norwegian Fisheries Commission it was agreed that the plan will be in force until 2015.

This quotation is taken from Annex 14 in the Protocol of the 38th Session of the Joint Russian–Norwegian Fisheries Commission and translated from Norwegian to English. For an accurate interpretation, please consult the text in the official languages of the Commission (Norwegian and Russian).

STOCK STATUS:

	Fishing pressure			
	2011	2012	**2013**	
MSY (F_{MSY})	✓	✓	✓	Appropriate

Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MGT})	✓	✓	✓	Below target

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MGT})	✓	✓	✓	Above trigger

The SSB has been above MSY $B_{trigger}$ since 2002 and is now the highest observed. The total stock biomass is close to the highest observed. Fishing mortality was reduced from well above F_{lim} in 1997 to below FMSY in 2007 and is close to its lowest value in the time-series. Surveys indicate that year classes 2010–2013 are slightly above average.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the Joint Russian–Norwegian Fisheries Commission management plan that TAC in 2015 should be set at 894,000 t. All catches are assumed to be landed. Bycatches of Coastal cod and *Sebastes marinus* should be kept as low as possible.

Other considerations

MSY considerations

Fishing at F_{MSY} (= 0.40) corresponds to catches of no more than 878 kt in 2015. This is expected to keep SSB above MSY $B_{trigger}$ in 2016.

Additional considerations

Management considerations

Unreported landings, as estimated by the Joint Norwegian–Russian analysis group, were reduced considerably compared to the period 2006–2008. For 2009–2012, unreported landings are estimated to be negligible.

Management plan

The plan aims to maintain F at F_{pa} = 0.40 and to restrict between-year TAC changes to ±10% unless SSB falls below B_{pa}, in which case the target F should be reduced.

The management plan was amended in 2009, adding a new condition: “If the TAC, by following such a rule, corresponds to a fishing mortality (F) lower than 0.30 the TAC should be increased to a level corresponding to a fishing mortality of 0.30”, when SSB is above B_{pa}.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that the catch prescribed by the management plan for 2015 of 894,000 t represents 10% decrease on the agreed TAC for 2014. This level of catch corresponds to a fishing mortality rate of F=0.41 in 2015, which represents a 21% increase in the assumed F for 2014 (= $F_{2013=}$ 0.34) and is slightly above FMSY. If the agreed TAC for 2014 (993,000 t) is taken, the catch prescribed by the management plan for 2015 (894,000 t) will be an overestimate.

6.3 Cod (*Gadus morhua*) in area I and II (Norwegian coastal cod)

FISHERIES: The geographical distribution of coastal cod and Northeast Arctic cod overlap, particularly in the first half of the year, when the Northeast Arctic cod migrates to the Norwegian coast to spawn. Also, immature Northeast Arctic cod migrate to the Norwegian coast to feed on spawning capelin. Genetic studies indicate that the cod in some fjords may be separate stocks. An assessment of the combined stocks is not likely to detect fluctuations of the smaller components, and thereby the current assessment approach involves some risk to local stocks. The stock complex is still not fully mapped, but the existence of local stocks also calls for special attention to protect genetic diversity and smaller components.

Landings of cod are nevertheless counted against the overall cod TAC for Norway, where the expected catch of coastal cod is in the order of 10%. Catches of coastal cod are thereby not effectively restricted by quotas. The fishery is regulated by the same minimum size, the same minimum mesh size on fishing gears as for Northeast Arctic cod, maximum bycatch of undersized fish, closure of areas having high densities of juveniles, and by seasonal and area restrictions. In addition to the mixed fishery with Northeast Arctic cod, coastal cod is also caught as bycatch in the saithe fishery.

The 2011 commercial landings were estimated to be 28 600 t (51% gillnets, 26% Danish seine, 21% longline / handline, 2% bottom trawl), i.e. above the expected catch (21 000 t) set at the quota agreement. In addition, unreported catches in recreational fishing were estimated at 12 700 t in 2009 and the tonnage is assumed to be constant for 2010–2012. The regulations have not reduced catches, and current catches are considered to be too high. Commercial landings (2012) = 31.9 kt (49% gillnets, 27% Danish seine, 21% longline/handline, and 3% bottom trawl). Commercial landings for 2013 were estimated to be around 22,000 t so they are still above the expected catch but the trend is decreasing.

SOURCE OF MANAGEMENT ADVICE: ICES is providing advice for management of this stock. SURBA and XSA analyses are used to give broad trends, and it is based on catch-at-age data and on an acoustic survey. The assessment is considered indicative of stock trends and does not reflect absolute stock sizes. Since a trends-based assessment is provided for this stock, no fishing possibilities can be projected.

Estimated catches in the recreational fishery have been added to the commercial catch. These represented about 30-35% of the total catch as estimated in 2009. The accuracy of this estimate was not available. Changes in the landings sampling programme lead to increased uncertainty in the estimated quantity and age composition of commercial landings of coastal cod in 2010. The sampling improved somewhat in 2011. This does not invalidate the overall conclusions.

REFERENCE POINTS: No reference points have been defined for this stock.

MANAGEMENT AGREEMENTS: A rebuilding plan was put into operation in 2011. The plan specifies the following reductions in fishing mortality:

Action step[1]	1	2	3	4	5	6 and later
Reduction of F relative to F_{2009}	15%	30%	45%	60%	75%	keep F at or below 0.1

[1] A new step is initiated when the most recent survey index for SSB is lower than the index in the previous year (and at the same time the most recent estimate of F is above 0.10).

The spawning–stock biomass (SSB) index in the 2010 survey was below the index in the 2009 survey. Thus 2011 was step 1. This means that the regulation in 2011 was aimed at a 15% reduction of F relative to F2009. The 2011 survey gave a higher SSB index than in 2010, allowing the regulation for step 1 to continue in 2012. The 2012 survey resulted in a lower SSB index compared

to 2011, and 2013 was therefore the step 2 where regulations should aim for F at least 30% below F2009. The 2013 survey gave increased SSB-index, allowing for the existing regulations to be continued in 2014. 2014 is still step 2.

The trend for the stock appears stable. Under these circumstances regulations should be put in place that reduce catches in proportion to the required reductions in F. If the 2014 SSB index is above the 2013 index, application of the rebuilding plan implies that the regulations should ensure that catch in 2015 is at least 30% below the 2009 value. If the SSB index in 2014 is lower than the index in 2013, the fisheries regulations should ensure a reduction of catch in 2015 of at least 45% relative to 2009 (step 3).

STOCK STATUS: This is a trends-based assessment. The survey indicates that the SSB is close to its lowest value. Recruitment has remained low in recent years. F appears variable without a clear trend since 2000.

RECENT MANAGEMENT ADVICE: ICES advises as last year on the basis of the Norwegian rebuilding plan, which requires access to the 2014 autumn survey results that will be available in December. If the spawning-biomass index in the 2014 autumn survey is lower than the index in 2013, the fisheries regulations should aim at a reduction of F in 2015 of at least 45% relative to 2009. If the survey index is higher than in 2013, the plan stipulates the measures taken in 2014 should continue in 2015.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

6.4 Haddock (*Melanogrammus aeglefinus*) in subareas I and II (Northeast Arctic haddock)

FISHERIES: Haddock is mainly fished by trawl as bycatch in the fishery for cod, with some directed fisheries by longlines and trawlers. TAC regulations are in place but there was non-compliance, resulting in a significant amount of unreported landings in the past. Non-reported landings for the period 2002–2008 were estimated as ranging from 6,000 t to 40 000 t (between 4% and 34% of the international reported landings). However, IUU (Illegal, Unreported and Unregulated) catches have decreased in recent years and were close to zero in 2009 - 2013.

In recent years Norway and Russia have accounted for more than 70% of the landings. The total landings in 2007 and 2008 were estimated to be 161,000 t and 156,000 t respectively. In 2009 the total landings was 200,000 t, and in 2010 249,000 t. In 2011 total landings were 310 000 t (73% trawl, 17% longline, 10% other gear types). Total landings (2012) = 315 kt (70% trawl, 19% longline, and 11% other gear types). The total landings for 2013 were estimated to be around 194,000 t (67% trawl, 14% longline, and 19% other gear types).

The fishery is regulated by TACs. The fishery is also regulated by a minimum fish size, a minimum mesh size in trawls and Danish seine, a maximum bycatch of undersized fish, maximum bycatch of non-target species, closure of areas with high density of juveniles, and other area and seasonal restrictions. Since January 1997, sorting grids have been mandatory for the trawl fisheries in most of the Barents Sea and Svalbard area. A real-time closure system has been in force along the Norwegian coast and in the Barents Sea since 1984, aimed at protecting juvenile fish. Based on scientific research vessel data and mapping of areas by hired fishing vessels, fishing is prohibited in areas where the proportion by number of undersized cod, haddock, and saithe combined has been observed by inspectors to exceed 15% (the size limits vary by species). In addition to the temporary closed areas, some areas are permanently closed, either to protect juvenile cod and haddock (around Bear Island) or to reduce fishing pressure on coastal cod and to avoid gear conflicts. The use of selective gear technology in the demersal fisheries since 1997 has also reduced the catch and possible discarding of juveniles. From 1 January 2011 onwards, the minimum mesh size for bottom

trawl fisheries for cod and haddock is 130 mm for the entire Barents Sea (before 2011 it was 135 mm in the Norwegian EEZ and 125 mm in the Russian EEZ). This change is expected to have a minor impact on the total exploitation pattern for this stock; thus, a recent average exploitation pattern is used in the predictions. From 1 January 2011, the technical regulations for the demersal fisheries were harmonized so that they now are the same in the Norwegian and Russian EEZs. The present minimum size is 40 cm for haddock (previously it was 44 cm in the Norwegian EEZ and 39 cm in the Russian EEZ). The maximum allowable percentage of fish below the minimum size is 15% by number of cod, haddock, and saithe combined in the Norwegian EEZ, and 15% by number of cod and haddock combined in the Russian EEZ. Previously, the maximum percentage was 15% for each species (cod and haddock) in the Russian EEZ. The effect of these changes is expected to be small as long as the fishing mortality is kept low, as implied by the agreed harvest control rule.

The fisheries are controlled by inspections of the trawler fleet at sea, by a requirement to report catches at control points when entering and leaving the EEZs, and by inspections of all fishing vessels when landing the fish. Keeping a detailed fishing logbook on board is mandatory for most vessels, and large parts of the fleet report to the authorities on a daily basis. Discarding is prohibited both in Russian and in Norwegian waters. However, discarding of haddock just below the minimum size is known to be a problem in the longline and trawl fisheries when those fish are abundant.

SOURCE OF MANAGEMENT ADVICE: ICES is providing advice for management of this stock. Analytical assessment based on catch-at-age data (XSA) was used to assess the stock, tuned using four survey series (1 acoustic, 3 trawl). Estimates of cod predation on young haddock are available from 1984 and varying natural mortality caused by predation from cod is taken into account in the assessment.

Discards are not included since there are no estimates of discarding although there is known to be a discarding problem in the longline and trawl fisheries. There is a lack of samples from certain gears and areas and Russian sampling of commercial catches has also shown a declining trend.

MANAGEMENT AGREEMENTS: A management plan has been in force since 2004 with the objectives of maintaining high long-term yield, year-to-year stability, and full utilization of all available information on stock dynamics. The plan aims to maintain F at F_{pa} = 0.35 and minimize between-year TAC change to +/− 25%, unless SSB falls below B_{pa} in which case the management targets should change.

At the 36th Session of the Joint Russian–Norwegian Fishery Commission (JRNFC) in autumn 2007 the parties agreed to modify the former three-year rule to a one-year rule in accordance with the results of ICES HCR evaluation. The current HCR for haddock is as follows (see details in Protocol of the 40th Session of the Joint Russian–Norwegian Fisheries Commission, 14 October 2011):

- *TAC for the next year will be set at level corresponding to Fmsy.*
- *The TAC should not be changed by more than ±25% compared with the previous year TAC.*
- *If the spawning stock falls below Bpa, the procedure for establishing TAC should be based on a fishing mortality that is linearly reduced from Fmsy at Bpa to F= 0 at SSB equal to zero. At SSB-levels below Bpa in any of the operational years (current year and a year ahead) there should be no limitations on the year-to-year variations in TAC.*

At the 39th Session of the Joint Russian–Norwegian Fisheries Commission in 2010 it was agreed that the current management plan should be used “for five more years” before it is evaluated.

ICES has evaluated the modified management plan and concluded that it is in accordance with the precautionary approach and not in contradiction with the maximum sustainable yield (MSY) framework.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
Management Plan	SSB_{MP}	80 000 t.	B_{pa}. TAC is linearly reduced from F_{pa} at SSB = B_{pa} to zero at SSB = 0.
	F_{MP}	0.35	Previous F_{pa} estimated prior to the revision of the historical time-series for this stock.
MSY Approach	MSY $B_{trigger}$	80 000 t.	B_{pa}.
	F_{MSY}	0.35	Stochastic long-term simulations.
Precautionary Approach	B_{lim}	50 000 t.	B_{loss}.
	B_{pa}	80 000 t.	$B_{lim} \times \exp(1.645 \times 0.3)$.
	F_{lim}	0.77	Corresponds to SPR value of slope of line from origin at SSB = 0 to geometric mean recruitment at SSB = B_{lim}.
	F_{pa}	0.47	$F_{lim} \times \exp(-1.645 \times 0.3)$.

(unchanged since 2011)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✓	Below target
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MGT})	✗	✗	✓	Below target

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MGT})	✓	✓	✓	Above trigger

The SSB has been above MSY $B_{trigger}$ since 1990, increasing since 2000 and reaching the series maximum in 2011. Fishing mortality has been around F_{MSY} since the mid-1990s. Recruitment-at-age 3 has been at or above average since 2000. The year classes 2004–2006 are estimated to be very strong and are still dominating the spawning stock. The year classes after 2006 have been around average.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the Joint Russian–Norwegian Fisheries Commission management plan that landings in 2015 should be no more than 165 000 t. Discards are known to have taken place but cannot be quantified; therefore, total catches cannot be calculated.

Other considerations

Management plan/ MSY approach

The current harvest control rule (HCR) is based on F_{MSY}. ICES advises the continued use of the HCR with target F = 0.35 and maximum ±25% change in TAC compared with the previous year's TAC. This implies F_{MP} = 0.35 in 2015, corresponding to landings of 165 000 t in 2015, which is expected to keep SSB above B_{pa} in 2016.

Precautionary approach

The fishing mortality in 2015 should be no more than F_{pa}, corresponding to landings of less than 210 000 t in 2015. This is expected to keep SSB above B_{pa} in 2016.

Additional considerations

Non-reported landings (IUU) for the period 2002–2008 were estimated as ranging from 6 kt to 40 kt (between 4% and 34% of the international reported landings). The IUU estimate for 2009–2013 is zero.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that on the basis of the Joint Russian–Norwegian Fisheries Commission management plan landings in 2015 should be no more than 165,000 t.

6.5 Saithe (*Pollacius virens*) in the North East Arctic (Sub-areas I and II)

FISHERIES: Since the early 1960s, the fishery has been dominated by purse seine and trawl fisheries, with a traditional gill net fishery for spawning saithe as the third major component. The purse-seine fishery is conducted in coastal areas and fjords. Historically, purse-seiners and trawlers have taken, approximately, equal shares of the catches. Regulation changes led to a reduction in the amounts being taken by purse-seiners after 1990.

Norway accounts for more than 90% of the landings. Over the last ten years about 40% of the Norwegian landings originates from bottom trawl, 25% from purse seine, 20% from gill net and 15% from other conventional gears (long line, Danish sine and hand line). The gill net fishery is most intense during winter, purse seine in the summer months while the trawl fishery takes place more evenly all year around. Coastal cod and *Sebastes norvegicus* are caught as bycatch in some of the saithe fisheries.

Landings of saithe were highest in 1970-1976 with an average of 238,000 t and a maximum of 265,000 t in 1970. This period was followed by a sharp decline to a level of about 160,000 t in the years 1978 - 1984. Another decline followed and from 1985 to 1991, the landings ranged from 70,000 - 122,000 t. An increasing trend was seen after 1990 to 171,498 t in 1996. Since then the annual landings have fluctuated between 136,000 and 212,480 t. with the highest figure in 2006. Landings in 2007, 2008, 2009, and 2010 were 197,000 t, 183,000 t , 161,000 t and 193,000 t respectively. Total landings in 2011 were 157,000 t (43% trawl, 29% purse-seine, 20% gillnet and 8% other gear types). Total catch (2012) was 161 kt (46% trawl, 27% purse-seine, 18% gillnet, and 9% other gear types). Total catch in 2013 was 132 kt (49% trawl, 26% purse-seine, 15% gillnet, and 10% other gear types).

TAC regulations are in place for this stock. Norway and Russia have each set national measures applicable to their EEZ. Since 2007 the catch has been less than the TAC. However, in 2010–2013 this difference was less than in previous years. In the Norwegian fishery, quotas may be transferred between fleets if it becomes clear that the quota allocated to one of the fleets will not be taken. In addition to quotas, the fisheries are managed by minimum mesh size, minimum fish size, bycatch regulations, area closures, and other area and seasonal restrictions. Furthermore, sorting grids are used in the trawl fishery.

On 1 March 1999, the minimum fish size was increased to 45 cm for trawl and conventional gears, and to 42 cm (north of Lofoten) and 40 cm (between 62°N and Lofoten) for purse-seine, with an

exception for the first 3000 t purse-seine catch between 62°N and 66°33′N, where the minimum fish size remains at 35 cm. A real-time closure system has been in force along the Norwegian coast and in the Barents Sea since 1984, aimed at protecting juvenile fish. Based on scientific research data and mapping of areas by hired fishing vessels, fishing is prohibited in areas where the proportion by number of undersized cod, haddock, and saithe combined has been observed by inspectors to exceed 15% (the size limits vary by species). In the purse-seine fishery the limit is 30%. The time of notice before a closure of an area comes into force is 2–4 hours for national vessels and 7 days for foreign vessels. Before or parallel to a closure, the Coast Guard requests vessels not to fish in an area where too many small fish have been observed during their inspections. A closed area is not opened until a low percentage of juvenile fish is documented by trial fishing within the area by the Surveillance Service.

Discarding is illegal, but may occur when trawlers targeting cod catch saithe without having a quota for saithe. In the purse-seine fishery, slipping has been reported, mainly related to minimum size of fish in the catch. There is no quantitative information on discards, but they are considered minor.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The advice is based on a state-space assessment model SAM, using one survey index with a time-series split in 2002 (treated as two separate survey series).

MANAGEMENT AGREEMENT: This stock is currently managed by a joint Norwegian and Russian scientific advisory body. The fisheries are regulated according to bilateral agreements between Russia and Norway. The Norwegian Ministry of Fisheries and Coastal Affairs implemented a harvest control rule (HCR) in autumn 2007. The harvest control rule as revised in 2013 and communicated to ICES by the Norwegian Ministry of Fisheries and Coastal Affairs contains the following elements:

- *Estimate the average TAC level for the coming 3 years based on F_{mp}= 0.32[6]. TAC for the next year will be set to this level as a starting value for the 3-year period.*
- *The year after, the TAC calculation for the next 3 years is repeated based on the updated information about the stock development. However, the TAC should not be changed by more than +/− 15% compared with the previous year's TAC.*
- *If the spawning-stock biomass (SSB) in the beginning of the year for which the quota is set (first year of prediction), is below B_{pa}, the procedure for establishing TAC should be based on a fishing mortality that is linearly reduced from F_{mp} at SSB = B_{pa} to 0 at SSB equal to zero. At SSB levels below B_{pa} in any of the operational years (current year and 3 years of prediction) there should be no limitations on the year-to-year variations in TAC.*

The HCR has the objectives of maintaining high long-term yield, year-to-year stability, and full utilization of all available information on the stock dynamics. In 2007 the target fishing mortality used in the harvest control rule (F_{MP}) was set to F_{pa} = 0.35. In June 2013, after release of ICES advice for 2014 for this stock, F_{MP} was reduced to 0.32 by the Norwegian Ministry of Trade, Industry and Fisheries.

ICES evaluated the HCR in 2007 and concluded that it is consistent with the precautionary approach, providing the assessment uncertainty and error are not greater than those calculated from historical data. This also holds true for implementation error (difference between TAC and catch).

REFERENCE POINTS:

[6] F_{mp} was formerly 0.35.

	Type	*Value*	*Technical basis*
Management Plan	Trigger SSB_{MP}	220 000 t.	B_{pa}, F is linearly reduced from F_{pa} at SSB = B_{pa} to zero at SSB = 0.
	F_{MP}	0.32	Average TAC for the coming three years based on F_{MPp}.
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	Not defined.	
Precautionary	B_{lim}	136 000 t.	Change point regression.
	B_{pa}	220 000 t.	$B_{lim} \times \exp(1.645 \times \sigma)$, where $\sigma = 0.3$.
	F_{lim}	0.58	F corresponding to an equilibrium stock = B_{lim}.
	F_{pa}	0.35	$F_{lim} \times \exp(-1.645 \times \sigma)$, where $\sigma = 0.3$. This value is considered to have a 95% probability of avoiding the F_{lim}.

(unchanged since: 2005, F_{MP} changed in 2013)

STOCK STATUS

F (Fishing Mortality)				
	2011	2012	**2013**	
MSY (F_{MSY})	?	?	?	Undefined
Precautionary approach (F_{pa},F_{lim})	O	O	O	Increased risk
Management plan (F_{MP})	✗	✗	✗	Above target

SSB (Spawning-Stock Biomass)				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓	Above trigger

The SSB has declined since 2006 and is slightly above B_{pa} in 2014. The fishing mortality was below F_{pa} from 1997 to 2008, but started to increase in 2005; having been above F_{pa} in the last five years it is expected to be close to F_{MP} in 2014.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the Norwegian management plan that catches in 2015 should be no more than 122 000 t. All catches are assumed to be landed. Bycatches of coastal cod and *Sebastes norvegicus*[7] in fisheries targeting saithe in Subareas I and II should be kept as low as possible.

Other considerations

Management plan

[7] This species has up to now been named *Sebastes marinus.* It was decided to adopt the species list by WoRMS (http://www.marinespecies.org/). The name used for this species will hence hereafter be *Sebastes norvegicus*.

Following the revised management plan implies a TAC of 122 000 t in 2015. The SSB is expected to remain above B_{pa} at the beginning of 2016.

Additional considerations

Since the saithe HCR is a three-year rule, the estimation of average F_{MP} catch in the HCR will affect stock numbers up to age seven, and thereby heavily affect the total prognosis of the fishable stock and the quotas derived from it. The recruitment-at-age 3 estimated by the SAM has on average been almost 10% below the long-term geometric mean since 2005.

The stock is exploited by fleets from a number of nations that acquire fishing rights by quota swaps with Norway. In addition, Russia sets a small quota for the Russian zone. ICES advice applies to all catches of Northeast Arctic saithe.

STECF COMMENTS: STECF agrees with the ICES assessment of the stock and with the advice for 2015.

6.6 Beaked redfish *(Sebastes mentella*) in Sub-areas I and II

FISHERIES: Traditionally, Russia and other East-European countries in the areas from south of Bear Island to Spitsbergen have conducted the directed fishery. From the mid-1970s to the mid-1980s, large catches were taken. In the mid-1980s, Norwegian trawlers started fishing along the continental slope (around 500-m depth) further south, in areas never harvested before, and inhabited primarily by mature fish. After a sharp decrease in the landings from the traditional area until 1987, this fishery on new grounds resulted in a temporary increase in the landings until 1991, after which the landings declined. Since 1991, the fishery has been dominated by Norway and Russia.

A directed pelagic fishery for S. *mentella* in the international waters of the Norwegian Sea outside EEZ has developed since 2004. In 2006, this fishery developed further to become a fishery with 13 countries; more than 40 trawlers landed around 28,000 t. Catches in 2007 and 2008 have decreased significantly (16,000 and 9,000 t, respectively) due to TACs set by the managing body, the North-East Atlantic Fisheries Commission (NEAFC), as well as a decreased economic value of redfish. Total ICES catch estimates for 2009 and in 2010 were 10, 000 and 12,000 t, respectively, including also the pelagic catches in the Norwegian Sea outside the EEZ. Total landings in 2011 were 12,400 t, of which 67% was taken by pelagic trawl in international waters in the Norwegian Sea and 33% was taken as bycatch in the Barents Sea and adjacent waters. Total catch (2012) = 10.9 kt, where 100% were landings of which 67% was taken by pelagic trawl in international waters in the Norwegian Sea and 33% as bycatch in the demersal fisheries in the Barents Sea and adjacent waters. Total catch in 2013 was 9.3 kt, all official landings (68% pelagic trawl in international waters, 32% as bycatch in the demersal fisheries in the Barents Sea and adjacent waters).

Other catches of *S. mentella* are taken as bycatches in the demersal cod/haddock/Greenland halibut fisheries, as juveniles in the shrimp trawl fisheries, and occasionally in the pelagic blue whiting and herring fisheries in the Norwegian Sea. In March 2014, Norway opened for directed fishing by Norwegian vessels with pelagic and demersal trawls targeting *S. mentella* in the Norwegian Economic zone, with a TAC for 2014 of 17 280 t. This TAC must also cover catches of redfish in other fisheries. The Russian bycatch of redfish (*S. mentella* and *S. norvegicus* combined) in the Norwegian EEZ is in 2014 limited to 4000 t.

Since 1 January 2003, all directed trawl fisheries for *S. mentella* have been forbidden in the Norwegian EEZ north of 62°N and in the Svalbard area. Additional protection for adult *S. mentella* comprises area closures. Outside permanently closed areas it is, however, legal to have up to 20% redfish (*S. mentella* and *S. norvegicus* combined) in round weight as by-catch per haul and on-board at any time when fishing for other species. Since 1 January 2005, the by-catch percentage has been reduced to 15% (both species combined).

MANAGEMENT AGREEMENTS: The *S. mentella* occurrences inside the Norwegian and Russian EEZs are currently managed by a joint Norwegian and Russian scientific advisory body. The fisheries are regulated according to bilateral agreements between Russia and Norway. Since last year's assessment ICES has received requests from NEAFC and from the Joint Norwegian–Russian Fisheries Commission (JNRFC) on the evaluation of a harvest control rule for *Sebastes mentella* in Subareas I and II. ICES has evaluated a wide variety of proposed settings for a management plan for this stock and identified a number of options that are considered precautionary and consistent with the MSY approach, concluding that the following elements should be incorporated in a future management plan:

- A *biomass trigger* of 600 kt is a good starting point for management.
- There is little long-term gain in yield if F_{target} is increased above 0.039.
- The stock and recruitment might benefit from a delayed or gradual implementation of a management plan, or a gradual increase of F (fishing at F_{target} only after the stronger incoming year classes have fully recruited to the fishery in 2017/2018). A low fixed TAC in the initial period or a stabilizing element in the management plan might have a similar effect if implemented on the basis of recent catches

SOURCE OF MANAGEMENT ADVICE: The advisory body is ICES. The assessment is conducted using statistical catch-at-age (SCAA) 1992–2013. Additionally, the Schaefer biomass model (1952–2013) is also used. Three surveys are used.

REFERENCE POINTS: $F_{0.1}$ (ages 12-18) = 0.039. No biomass reference points are available for this stock.

The F-reference points are based on the 1992–2012 time-series from AFWG 2013.

	Fish Mort Ages 12–18	Yield/R	SSB/R
Average last 3 years	0.008	0.082	5.78
F_{max}	0.192	0.228	0.91
$F_{0.1}$	0.039	0.189	2.90

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	✓	Fishing pressure is below any relevant reference point

	Stock size	
		2012–2014
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation		

The total stock biomass (TSB) is estimated to have been relatively stable over the last ten years, with a higher proportion of mature fish than in the 1990s. This has been changing in recent years as a result of strong incoming year classes. The temporal patterns in recruitment-at-age 2 indicate a continued return to high levels of recruitment after the recruitment failure for the year classes 1996 to 2003. The estimate for 2013 (year class 2011), although highly uncertain, is the fifth highest since 1992. Spawning–stock biomass (SSB) steadily increased from 1992 to 2007, followed by a decline and stabilization after 2009 as the poor year classes (1996–2003) become mature.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of precautionary considerations that an annual catch in 2015, 2016, and 2017 should be set at no more than 30 000 t, and that the measures currently in place to protect juveniles should be maintained. All catches are assumed to be landed.

Other considerations

Precautionary considerations

ICES has advised that stock and recruitment might benefit from a delayed or gradual implementation of a management plan by allowing a low fixed TAC in the initial period on the basis of recent catch. Fishing at a future F_{target} should be delayed until after the incoming promising and stronger year classes have confirmed their strengths and fully recruited to the fishery and started becoming mature. The special request (ICES, 2014d) indicated support for this approach and that the proposed longer term F_{target} should be $F_{0.1}$ (0.039).

ICES considers that an initial five-year average catch rather than next years' catch options is appropriate for this stock. A range of catch options based on the special request (ICES, 2014d) are given in the outlook table.

Using the proposed management approach as the basis, ICES makes the following observations. Currently exploitation at $F_{0.1}$ is associated with mean catches of 52 000 t; however, such catches are not compatible with waiting for the promising year classes to recruit to the fishery and stock. Catches of 45 000 t are thought to give a 50% probability of stock increase or decrease. Recent catches over the last six years have been in the range of 9000 to 13 000 t. Catches in 2014 are expected to be in the order of 24 000 t. A moderate and potentially detectable increase in stock size of around 10% that would allow recent stronger year classes to recruit is associated with catches below 30 000 t. ICES concludes that a fixed TAC of between 10 000 to 30 000 t would be compatible with these management objectives. Given that the next survey is expected to be in the autumn of 2016, ICES concludes that an annual fixed TAC within this range, and no more than 30 000 t, can be set for 2015, 2016, and 2017. Measures currently in place to protect juveniles should be maintained.

Additional considerations

The historical (1996–2003) failure in recruitment indicates that current as well as future recruitment to the SSB or the fishery in the coming years will be small, and hence catches based on the long-term average F_{MSY} may be inappropriate in the short term.

Documentation of the fishing effort involved and the catches taken in the international fishery is very important, and NEAFC is requested to provide timely and consistent information for future stock assessments and advice. National reporting of length distributions in the demersal and pelagic commercial catches is required.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the *S. mentella* stock and the advice for 2015, 2016 and 2017.

The analytical assessment and advice are provided for ICES Subareas I and II combined. The fishery for *S. mentella* operates in national and international waters, which are managed under different schemes and by two distinct management organizations: NEAFC , the Coastal States, and the Joint Norwegian–Russian Fisheries Commission (JNRFC). In international waters, the fishery is managed by NEAFC and, in recent years, an Olympic fishery has been conducted with a set TAC, which is not derived from a harvest control rule In national waters, the redfish fishery is a bycatch and directed trawl fishery with specific regulations. STECF agrees with ICES that it is important that management decisions taken by NEAFC and JNRFC are coordinated to ensure that the total catch in ICES Subareas I and II does not exceed the recommended level.

STECF further notes that at present the European TACs are not set separately by redfish species but for *S. mentella* and *S. norvegicus* in Sub-areas I and II combined. Considering the ICES advice for 2014 that there should be no fishery on *S. norvegicus*, STECF notes that managers may wish to implement a more precautionary approach.

6.7 Golden redfish (*Sebastes norvegicus*) in Sub-areas I and II

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: The fishery is mainly conducted by Norway, accounting for 80-90% of the historical total catch. *Sebastes norvegicus* is fished both in a directed gillnet and longline fishery and as bycatch in trawl fisheries targeting cod and saithe. The fish are also caught to a lesser extent by Danish seine, and handlines. Important fishing grounds are the Møre area (Svinøy), Halten Bank, outside Lofoten and Vesterålen, and at Sleppen outside Finnmark. Traditionally, *S. norvegicus* has been the most popular and highest priced redfish species. In the period 1984-90, landings of *S. norvegicus* were at a level of 23,000–30,000 t. In the period 1991-1999, the landings were around 17,000 t but since then have decreased, and from 2004 to 2007, annual landings were estimated to be about 7,000 t. The 2008 landings were 6,600 t. EU landings reached 388 t in 2007 and about 227 t in 2008. Landings in 2009 are estimated to have been about 6,000 and in 2010 about 8,000 t. Commercial landings in 2011 were 5,800 t, of which 37% are taken by trawl, 39% by gillnet, 22% by longline, and 2% by other gears. Commercial catches in 2012 were 5479 t, where 100% were landings (36% by gillnet, 62% by longline and trawl combined, and 2% by other gears). Estimated landings for 2013 are 5 t.

All directed fishery except by handline is closed in the period 20 December-31 July and in September. Directed trawl fishery is not allowed. A minimum legal landing size of 32 cm has been set for all Norwegian fisheries and international fisheries in the Norwegian EEZ, with an allowance to have up to 10% undersized (i.e., less than 32 cm) specimens of *S. norvegicus* (in numbers) per haul. There are regulations on the percentage of allowed bycatch of *S. norvegicus* when fishing for other species. From January 2006, it is forbidden to use gillnets with mesh size less than 120 mm when fishing for redfish. The closed seasons enforced since 2004 seem to have reduced the gillnet catches by about 2,500 t, while the catches taken by other gears have not decreased, and in some cases increased, causing the total international catches to remain at the same level during the last 7 years.

SOURCE OF MANAGEMENT ADVICE: ICES provides advice for management of this stock. The assessment methodology was evaluated and a benchmark assessment was conducted during the ICES redfish stocks benchmark meeting in February 2012. Gadget was accepted as the main analytical assessment model for *S. marinus* in Subareas I and II. The model is a single-species, age–length structured model, split into mature and immature components. Data from two commercial fleets (a gillnet fleet and a combined trawl and other gears fleet), and two surveys was considered.

MANAGEMENT AGREEMENTS: The stock is currently managed by a joint Norwegian and Russian scientific advisory body and regulated according to bilateral agreements between Russia and Norway.

REFERENCE POINTS: No reference points have been established for this stock.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2012	
MSY (F_{MSY})		Above
Precautionary approach (F_{pa},F_{lim})		Unknown
Qualitative evaluation		Increasing trend

SSB (Spawning-Stock Biomass)		
	2011–2013	
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		SSB lowest in the time-series

SSB has been decreasing since the 1990s and is currently at the lowest level in the time-series. Fishing mortality has been increasing since 2005, and is well above a sustainable level for a redfish stock. Recruitment has historically, especially since the late 1990s, been very low. Recently there have been signals of better recruitment, although it is not clear if these are *S. norvegicus*, or misidentified fish from the larger *S. mentella* stock. In any event it would take more than three years before these recruits could enter the fishery or the SSB.

RECENT MANAGEMENT ADVICE:

New data (landings and surveys) available for this stock do not change the perception of the stock. Therefore the advice for this stock in 2015–2016 is the same as the advice for 2014: "ICES advises that that there should be no fishing on this stock."

Other considerations

Outlook for 2015–2016

Projections were conducted for this stock using the Gadget model and indicate that if recruitment is similar to average for recent years (2001–2011), the stock size will be very low by 2017. There is little prospect of any improvement in the situation over the next three years, given the low current SSB, the recent downward trend in the stock, and the delay before any potential good recruitment can enter the fishery.

Additional considerations

The current fishing mortality is around 0.33, which is very high compared to the natural mortality of 0.05, and probably well above a sustainable level for a redfish species. Modelling simulations suggest that at current recruitment levels, a sustainable F_{MSY} may lie around F = 0.08. However, this would require a stabilization of the stock before it could apply, and the priority is to stop (and reverse) the ongoing decline in the stock.

A portion of the catch is taken in a directed *S. norvegicus* fishery and closure of this fishery would help reduce the fishing mortality, although a reduction in bycatch in other fisheries would also be required to reduce fishing mortality to sustainable levels.

STECF COMMENTS: STECF agrees with the ICES assessment of state of the *S. norvegicus* stock and the ICES advice for 2015-2016.

STECF however notes that European TACs are not set separately by species for redfish but for *S. mentella* and *S. norvegicus* combined. ICES advice for 2015-2016 is to allow a fishery of up to 24,000 t total catch level on *S. mentella* in Subareas I and II. STECF advises that any fishery for redfish in subareas I and II is likely to impede the recovery of the stock of *S. norvegicus* in these areas.

6.8 Greenland halibut (*Reinhartius hippoglossoides*) in area I and II

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: The regulations enforced in 1992 reduced the total landings of Greenland halibut by trawlers from about 20,000 to 8,600 t. Since then annual trawler landings have varied between 9,000 and 20,000 t without any clear trend attributable to changes in allowable by-catch. In 2008 - 2010, the landings were estimated to amount to 14,000 t, 12,000 t and 16,000 t respectively. In 2011 the total landings were 16,300 t (58% trawl, 31% longline, 10% gillnet and 1% others). Total catch in 2012 = 20 079 t, where 100% are landings (60% trawl, 28% longline, 10% gillnet, and 2% others). Not relevant for discards. Total catch in 2013 was 21,461 t.

Since 1992, the fisheries have been regulated by allowing a directed fishery only by small coastal longline and gillnet vessels. By-catches of Greenland halibut in the trawl fisheries have been limited by permissible by-catch per haul and an allowable by-catch retention limit on board the vessel.

The 38th Session of the Joint Norwegian-Russian Fisheries Commission in 2009 decided to cancel the ban against targeted Greenland halibut fishery and established a TAC at 15 000 t for next three years (2010-2012). The TAC was allocated between Norway, Russia and other countries with shares of 51, 45 and 4% respectively. The 40th Session of JRNFC held in October 2011 raised the TAC for 2012 to 18 000 t.

SOURCE OF MANAGEMENT ADVICE: ICES is providing advice for the management of this stock. The fisheries are regulated according to bilateral agreements between Russia and Norway. A survey trends-based assessment based on two survey indices (Norwegian slope survey, Russian autumn survey) was carried out; discards and by-catch was not included. Discards were however considered to be minor. ICES noted that none of the current surveys cover the complete stock distribution, but most of the adult distribution area is covered. No analytical assessment could be presented for this stock. Biomass estimates from the surveys are not consistent.

REFERENCE POINTS: No reference points are defined for this stock.

MANAGEMENT AGREEMENTS: There are no explicit management objectives for this stock but the fisheries are regulated according to bilateral agreements between Russia and Norway. There are signs that the regulations of the last two decades have improved the status of the stock, and measures should be taken to maintain the positive trends.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
MSY (F_{MSY})	? Unknown

Precautionary approach (F_{pa},F_{lim})	Unknown

SSB (Spawning-Stock Biomass)	
	2011–2013
MSY ($B_{trigger}$)	Unknown
Precautionary approach (B_{pa},B_{lim})	Unknown
Qualitative evaluation	Increasing trend

Only landings and survey trends of biomass and abundance are available for this stock. Biomass estimates in. dicate a stable or increasing trend since 1992.

RECENT MANAGEMENT ADVICE:

New data (landings and surveys) available for this stock do not change the perception of the stock. The advice for this stock in 2015 is therefore the same as the advice for 2014: "ICES advises that catches should be no more than 15 000 t in 2015. All catches are assumed to be landed."

Other considerations

Additional considerations

Management considerations

There are signs that the regulations of the last two decades have improved the status of the stock, and measures should be taken to maintain the positive trends. There is no overall measure of the state of the stock or the fishery. Surveys of various parts of the area show diverse trends, mostly indicating that there is an increase in biomass. These surveys are insufficiently informative to give a quantitative measure of recent trends to use directly for management of the stock as a whole (Category 3 advice). It is not possible to determine whether or not increases in catch in the last few years will be consistent with continued improvement in stock biomass which is still considered to be relatively low compared to the long term. The generally positive trends from the surveys over the last few years can be taken to indicate that current catch rates are not likely to be detrimental and precautionary catch reductions do not appear to be necessary (Category 5). Nevertheless, there is insufficient information to justify continuation of catch at the 2012 level. Given these diverse, but largely positive indicators, the overall conclusion is to maintain the advice at the recent catch.

The 38th Session of the Joint Russian–Norwegian Fisheries Commission (JRNFC) in 2009 decided to cancel the ban against targeted Greenland halibut fishery and established an annual TAC. The 42nd Session of JRNFC raised the TAC for 2013 to 19 000 t.

It should be noted that the catches in Division IVa (north of Shetland, on the border between Divisions IVa and IIa) increased from about 200 t in 2011 to about 1000 t in 2012. This fishery is in another management area (EU zone), and is not restricted by any TAC regulations. However, there are limits on catches by non-EU countries in this area.

STECF COMMENTS: STECF agrees with the ICES assessment of state of the stock and the advice for 2015.

6.9 Herring (*Clupea harengus*) in ICES subareas I & II (Norwegian Spring spawners)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The total ***catches*** in 2012 were 826000 t., mainly taken by Norway (491 000 t), Russia (119 000 t), Iceland (121 000 t), EU (57 000 t), and Faroe Islands (36 000 t). The fishery in general follows the migration of the stock closely as it moves from the wintering and spawning grounds along the Norwegian coast to the summer feeding grounds in the Faroese, Icelandic, Jan Mayen, Svalbard, and international areas. Due to limitations for some countries to enter the EEZs of other countries in 2008, the fisheries do not necessarily depict the distribution of herring in the Norwegian Sea. A special feature of the summer fishery in 2005 and 2006 was the prolonged fishery in the Faroese and Icelandic zone. In 2007 and 2008 a clean herring fishery was hampered by mixture of mackerel schools in the area. This was especially the case for the Faroese fleet, which usually targets mackerel later in the year (October–November).

Management regulations have restricted landings in recent years.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an analytical assessment, which takes into consideration catch data, and eight surveys, three of which have not been continued in recent years, (acoustic surveys of adults and juveniles, larval survey, and 0-group survey). The present assessment is an updated assessment, using the models, configurations and procedures agreed at the benchmark assessment in 2008. From 2010 onwards, new maturity-at-age information was used for the whole time-series. This revision contributes to the change in perception of estimated SSB in the 2010 assessment.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management plan	SSB_{MP}	5.0 million t	Medium-term simulations conducted in 2001.
	F_{MP}	0.125	Medium-term simulations conducted in 2001.
MSY Approach	MSY $B_{trigger}$	5.0 million t	B_{pa}
	F_{MSY}	0.15	Stochastic equilibrium analysis using a Beverton–Holt stock–recruitment relationship with data from 1950 to 2009.
Precautionary Approach	B_{lim}	2.5 million t	MBAL (accepted in 1998).
	B_{pa}	5.0 million t	$B_{lim} \times \exp(0.4 \times 1.645)$.
	F_{lim}	Not defined.	-
	F_{pa}	0.15	Based on medium-term simulations.

(unchanged since: 2010)

STOCK STATUS:

F (Fishing Mortality)				
	2010	**2011**	**2012**	
MSY (F_{MSY})	✗	✓	✓	Appropriate
Precautionary approach (F_{pa})	✗	✓	✓	Harvested sustainably
Management plan (F_{MP})	✗	✗	✗	Above limit

SSB (Spawning-Stock Biomass)				
	2011	2012	2013	
MSY ($B_{trigger}$)	✓	✓	✓	At trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓	At trigger

The stock is declining and estimated at B_{pa} in 2013. In the last 15 years, five large year classes have been produced (1998, 1999, 2002, 2003, and 2004). However, the available information indicates that year classes born after 2004 have been small. Fishing mortality in 2011 and 2012 is slightly below F_{pa} and F_{MSY}, but above the management plan target F.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the management plan of EU, Faroe Islands, Iceland, Norway, and Russia that landings in 2014 should be no more than 418 487 t. Minor discards are known to take place, but cannot be quantified accurately; the proportion of discards in the total catches are considered negligible.

Other considerations

Management plan

Following the long-term management plan agreed by the EU, Faroe Islands, Iceland, Norway, and Russia implies a TAC of 418 487 tonnes in 2014. This is expected to lead to an SSB of 3.5 million tonnes in 2015.

The short-term prognoses indicate a decline in SSB from 5 million tonnes in 2013 to 4.1 and 3.5 million tonnes in 2014 and 2015, respectively, assuming that declared catches are taken in 2013 and exploitation in 2014 is in accordance with the management plan. The observed decline in the stock is consistent with previous assessments and forecasts; last year it was expected that the SSB in 2013 would decline to 5.1 million tonnes compared to this year's estimate of 5 million tonnes. Because the SSB in 2014 is assumed to be below B_{pa}, the advice is based on article 3 of the management plan, which will be applied for the first time. As a result, the fishing mortalities will be lower than the target F_{MP} of 0.125. Given the low recruitment in recent years, it is expected that SSB will remain below B_{pa} in the short term. This situation will continue until large year classes appear and recruit into the spawning stock, and because of the maturation taking place between the ages of 4 and 6 it will take at least four years until a strong year class contributes to an increase in the SSB. Surveys carried out in recent years in the Norwegian Sea and Barents Sea show no signs of new strong year classes after 2004.

MSY approach

Following the ICES MSY framework implies a fishing mortality of 0.124 (MSY $B_{trigger}$/SSB(2014)*F_{msy}) because SSB(2014) is below MSY $B_{trigger}$, resulting in landings of 512 000 tonnes in 2014. This is expected to lead to a decline in SSB in 2015 to 3.5 million tonnes.

Fishing mortality in 2012 is below F_{MSY}, therefore the transition scheme towards the ICES MSY framework does not apply.

PA approach

The precautionary approach states that should the SSB fall below B_{pa} the fishing mortality should be reduced to ensure a safe and rapid recovery of the B_{pa}. Even zero catches in 2014 is expected to lead to a reduction in SSB in 2015 to 3.9 million tonnes.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that the provisions of the management plan, agreed by EU, Faroe Islands, Iceland, Norway and Russia, prescribes that landings in 2014 should be no greater than 418,487t.

6.10 Capelin (*Mallotus villosus*) in ICES subareas I and II, excluding Division IIa-west of 5°W (Barents Sea capelin)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Norway and Russia are the two main countries which exploit the capelin stocks in these areas. No fishery took place between autumn 1993 and spring 1999. The fishery was re-opened in the winter of 1999. Since 1979 the fishery has been regulated by a bilateral agreement between Norway and Russia (formerly USSR) and since 1987, catches have been very close to the advice, varying between 100,000 t and 650,000 t. The fishery was closed from 2004-2008. In 2009, 2010 and 2011 landings amounted to 307 000 t, 315 000 t and 360 000 t respectively. The landing over the winter period at the start of 2012 are 296 000 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The assessment and stock history is based on joint Russia-Norwegian acoustic surveys during September each year. A model incorporating predation from cod has been used for predicting SSB and for estimating the historical time series of SSB (Report from the 2009 joint Russian-Norwegian meeting to assess the Barents Sea capelin stock, Kirkenes, October 3-4 2009. Report of the Arctic Fisheries Working Group, 21-27 April 2009. ICES CM 2009/ACOM: 02.).

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Undefined.	
	F_{MSY}	n/a	
Precautionary Approach	B_{lim}	200 000 t	Above SSB_{1989}, the lowest SSB that has produced a good year class.
	B_{pa}	n/a	
	F_{lim}	n/a	
	F_{pa}	n/a	

(unchanged since: 2010)

STOCK STATUS:

F (Fishing Mortality)				
	2011	2012	2013	
MSY (F_{MSY})	-	-	-	Not relevant
Precautionary approach (F_{pa},F_{lim})	-	-	-	Not relevant

SSB (Spawning-Stock Biomass)				
	2012	2013	2014	
MSY ($B_{trigger}$)	?	?	?	Undefined

Precautionary approach (B_{lim})	✓	✓	✓	95% probability of being above limit reference point

The maturing component of the stock in autumn 2013 was estimated to be 1.3 million tonnes. The spawning stock in 2014 will consist of fish from the 2010 and 2011 year classes. The joint Russian–Norwegian ecosystem survey estimate of the 2012 year class at age 1 is above the long-term average. The 0-group observations during the same survey in August–September 2013 indicated that the 2013 year class is around the long-term average.

The immature (< 14 cm) part of the stock is the largest since 1992.

MANAGEMENT OBJECTIVES: In 2002, the Joint Norwegian–Russian Fisheries Commission (JNRFC) adopted a management plan, in which the fishery is managed according to a target escapement strategy that includes the predation by cod by accounting for removals based on the size of the cod stock. A basis for the management plan is that all catches are taken on pre-spawning capelin. The harvest control rule is designed to ensure that when the fishery is closed, the SSB remains above the proposed B_{lim} of 200 000 tonnes (with 95% probability). ICES considers the management plan to be consistent with the precautionary approach.

In 2010, the JNRFC decided that the management strategy should not be changed for the following 5 years.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the management plan agreed by the Joint Norwegian–Russian Fisheries Commission (JNRFC) that catches in 2014 should be no more than 15 000 tonnes. All catches are assumed to be landed.

The basis of the assessment and the advice remains the same as last year. Although the total stock size is about the same as last year, the maturing stock is considerably lower (1.3 vs. 2.0 million tonnes). The mean length- and mean weight-at-age decreased for all age groups This affects the maturing stock in two ways: first, reduced growth in length led to a considerable lower number of individuals reaching the length at which the capelin matures (109 billions in 2012 vs. 74 billions in 2013), and second, the reduced growth led to lower mean length and mean weight in the maturing stock. Since the predation pressure from cod remains at a high level, this has led to a considerable reduction in the advised TAC for 2014 compared to 2013.

Other considerations

Management plan

Following the management plan agreed by the Joint Norwegian–Russian Fisheries Commission, catches in 2014 should be no more than 15 000 t. The harvest control rule in the management plan states that the quota set should ensure that the SSB remains above the proposed B_{lim} of 200 000 t with 95% probability.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that the provisions of the management plan agreed by Norway and Russia prescribes that catches in 2014 should be no greater than 15,000t.

7 RESOURCES IN THE FAEROE PLATEAU ECOSYSTEM

7.1 Cod (*Gadus morhua*) in Vb1 (Faroe Plateau cod)

FISHERIES: Cod are mainly taken in a directed cod and haddock fishery with long lines, in a directed jigging fishery and as by-catch in the trawl fishery for saithe. Following the declaration of EEZs in the 1970s, the fishery became largely Faroese and fishing mortality declined briefly but it has

increased since to former high levels. Landings have fluctuated between 6,000 and 40,000 t (1986-2007), almost entirely taken by non-EU fleets. Landings in 2009 and 2010 were 10,000 t and 12,700 t respectively. Total landings in 2012 were 6500 t, of which 59% was taken by the longlines, 5% by jigging, 35% by trawlers, and less than 1% by other gear types. There was no industrial by-catch or unaccounted removals. Total catches for 2013 were 5 kt, where 5 kt were estimated landings (61% longlines, 8% jigging, 31% trawlers, and 0.1% other gear types), 0 kt industrial bycatch, and 0 kt unaccounted removals.

An effort management system was implemented 1 June 1996. Fishing days are allocated to all fleets fishing in waters < 380 m depth for the period 1 September–31 August. In addition the majority of the waters < ca. 200 m depth are closed to trawlers, and are mainly utilized by longliners. The main spawning areas for cod are closed for nearly all fishing gears during spawning time. In 2011, additional areas were closed in order to protect incoming year classes of cod.

The EU fishery on this stock has been managed together with cod in VI, Vb (EC waters), International waters of XII and XIV.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on an analytical method using survey and catch-at-age data. The method was XSA calibrated by two research surveys (spring and summer surveys).

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	40 000 t.	B_{pa}.
	F_{MSY}	0.32	Provisional maximum sustainable yield, FLR stochastic simulations.
Precautionary Approach	B_{lim}	21 000 t.	Lowest observed SSB (1998 assessment).
	B_{pa}	40 000 t.	$B_{lim}e^{1.645\sigma}$, assuming a σ of about 0.40 to account for the relatively large uncertainties in the assessment.
	F_{lim}	0.68	$F_{pa}e^{1.645\sigma}$, assuming a σ of about 0.40 to account for the relatively large uncertainties in the assessment.
	F_{pa}	0.35	Close to F_{max} (0.34) and F_{med} (0.38) (1998 assessment).

(Last changed in: 2011)

STOCK STATUS:

Fishing pressure				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✓	Below target
Precautionary approach (F_{pa},F_{lim})	o	o	✓	Harvested sustainably

Stock size				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	o	o	o	Increased risk

SSB has remained around B_{lim} since 2005. Fishing mortality has decreased since 2010 and now below Flim, but still above Fpa and FMSY. The 2009–2012 year classes are estimated to be below average.

MANAGEMENT OBJECTIVES: A management system based on number of fishing days, closed areas, and other technical measures was introduced in 1996 to ensure sustainable demersal fisheries in Division Vb. This was before ICES introduced precautionary approach (PA) and MSY reference values, and at that time it was believed that the purpose was achieved if the total allowable number of fishing days was set such that on average 33% of the cod exploitable stock in numbers would be harvested annually. This translates into an average F of 0.45, above the F_{pa} and F_{MSY} of 0.35 and 0.32, respectively. ICES considers this to be inconsistent with the PA and the MSY approaches. Work is ongoing in the Faroes to move away from the F_{target} of 0.45 to be consistent with the ICES advice. This new management plan should include a stepwise reduction of the fishing mortality to F_{MSY} in 2015 and a recovery plan if the SSB declines below the $B_{trigger}$. The MSY $B_{trigger}$ has been defined at 40 kt (the former B_{pa}), and F_{MSY} at 0.32. If the SSB declines below the MSY $B_{trigger}$, the fishing mortality will be reduced by the relationship $F_{MSY} \times B_{act}/B_{trigger}$ until the SSB has increased again above the MSY $B_{trigger}$ and is thereafter kept at F_{MSY}.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that effort should be reduced such that fishing mortality in 2015 will be no more than F = 0.20, corresponding to a 23% reduction in the 2013 fishing mortality. All catches are assumed to be landed.

Other considerations

MSY approach

ICES advises on the basis of the MSY approach to reduce fishing mortality by 23% in 2015 to 0.20. This is 37% below F_{MSY}, because SSB in 2014 is 37% below MSY $B_{trigger}$.

Precautionary approach

The fishing mortality is below the F_{pa} of 0.35.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. STECF notes that the advice to fish at F=0.2 implies catches in 2015 of 4,500 t.

STECF notes that this stock is managed by an effort management system and that no TAC is set. However, STECF also notes that (given efficient effort control) the proposed Faroese management plan is consistent with the objective of achieving F_{MSY}.

7.2 Cod (*Gadus morhua*) in Vb2 (Faroe Bank cod)

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: during the recent 10 years total catches for this stock have fluctuated between 4000 and 200 t. In the latest years EU landings have constituted 10-20% of the total. The EU fishery on this stock has been managed together with cod in VI, Vb (EC waters), International waters of XII and XIV.

Faroe Bank has been closed to fishing since 1 January 2009. However, in 2010 and 2011, respectively, a total of 61 and 100 fishing days were allowed to small longliners (<15 BRT) in the shallow waters of the Bank. Landings in 2010 and 2011 amounted to 105 t and 370 t respectively. Officially-reported landings in 2012 were 108 t and 36 t in 2013.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

MANAGEMENT OBJECTIVES: There are no explicit management objectives for this stock.

REFERENCE POINTS: No reference points have been defined for this stock.

STOCK STATUS: There is no analytical assessment for this stock. Survey indices indicate that the stock is severely depleted.

RECENT MANAGEMENT ADVICE: New data on landings and indices from the annual Faroese surveys do not change the perception of the stock since 2008 and do not give reason to change the advice from 2008. The advice for the fishery in 2015 is therefore the same as the advice given since 2008: "*Because of the very low stock size ICES advises that the fishery should be closed. Reopening the fishery should not be considered until both survey indices indicate a biomass at or above the average of the period 1996–2002*".

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

STECF notes that no TAC is set for this stock and that Faroe Bank has been closed to fishing since 1 January 2009. STECF notes that in the fishing years 2010–2011 and 2011–2012, respectively, a total of 78 and 100 fishing days were allowed to small jiggers in the shallow waters of the Bank even if this closure advice should apply to all fisheries.

7.3 Haddock (*Melanogrammus aeglefinus*) in area Vb (Faroe)

FISHERIES: Haddock are mainly caught in a directed longline fishery for cod and haddock and as by-catches in trawl fisheries for saithe. Normally, longline gears account for 80–90% of the catches. In 2013 longlines accounted for 78% of the catches, trawlers took the rest. Landings are predominantly Faroese, with only low EU landings. Since 1993 total landings from Vb have increased from 4,000 t to 27,000 t in 2003 but have dropped to 5,197t in 2009. Total landings in 2010 were 5,198t and total landings in 2012 were down to 2613 t (in 2012 longliners accounted for 81% and trawlers for 19%). In 2013 total landings were 3,105 t, with longliners accounting for 78% and trawlers for 22%. There were no discards and no unaccounted removals.

An effort management system was implemented 1 June 1996. Fishing days are allocated to all fleets fishing in waters < 380 m depth for the period 1 September–31 August. In recent years only a fraction of the allocated number of fishing days has actually been utilized. In addition, the majority of the waters < ca. 200 m depth are closed to trawlers and are mainly utilized by longliners. The fishing law also prescribes fleet specific catch compositions of cod, haddock, saithe, and redfish.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The advice is based on an age-based assessment (XSA) using commercial landings and age disaggregated data from two surveys. Discards were not included in the assessment but discarding is not considered a major problem in this fishery.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY	MSY $B_{trigger}$	35 000 t.	B_{pa}
Approach	F_{MSY}	0.25	Stochastic simulations.
Precautionary	B_{lim}	22 000 t.	Lowest observed SSB.
	B_{pa}	35 000 t.	$B_{lim}e^{1.645\sigma}$, with σ of 0.3.

Approach	F_{lim}	0.40	$F_{pa} e^{1.645\sigma}$, with σ of 0.3.
	F_{pa}	0.25	F_{med} (1998) = 0.25.

(F_{MSY} and MSY $B_{trigger}$ were updated in 2012)

MANAGEMENT AGREEMENTS: A management system based on number of fishing days, closed areas, and other technical measures was introduced in 1996 to ensure sustainable demersal fisheries in Division Vb. This was before ICES introduced precautionary approach (PA) and MSY reference values, and at that time it was believed that the purpose was achieved if the total allowable number of fishing days was set such that on average 33% in numbers of the haddock exploitable stock would be harvested annually. This translates into an average F of 0.45, above the F_{pa} and F_{MSY} of 0.25. ICES considers this to be inconsistent with the PA and the MSY approaches. The Faroese authorities have realized this and have reduced the number of allocated days substantially. In addition, some areas close to land have recently been closed in order to protect young cod; this will also have a protection effect on haddock. At present, there is no explicit management plan for this stock. In 2013, a group representing the Ministry of Fisheries, the Faroese industry, the University of the Faroe Islands, and the Faroe Marine Research Institute proposed a management plan based on general maximum sustainable yield (MSY) principles developed by ICES. This management plan includes a stepwise reduction of the fishing mortality to F_{MSY} in 2015 and a recovery plan if the SSB declines below the MSY $B_{trigger}$. The MSY $B_{trigger}$ has been defined at 35 kt (the former B_{pa}) and F_{MSY} at 0.25. If the SSB declines below the MSY $B_{trigger}$, the fishing mortality will be reduced by the relationship $F_{MSY} \times B_{act}/MSY\ B_{trigger}$ until the SSB has increased again above the MSY $B_{trigger}$ and is thereafter kept at F_{MSY}. The plan has not yet been approved by the authorities.

STOCK STATUS:

F (Fishing Mortality)				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✓	✓	At target
Precautionary approach (F_{pa},F_{lim})	○	✓	○	Increased risk

SSB (Spawning-Stock Biomass)				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✗	✗	Below trigger
Precautionary approach (B_{pa},B_{lim})	✗	✗	✗	Reduced reproductive capacity

SSB has decreased since 2003 and is estimated to have been below B_{lim} since 2010. The fishing mortality has decreased from above F_{lim} in 2003 to slightly above F_{MSY} in 2013. Recruitment from 2003 onwards has been well below the long-term average.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that there should be no directed fishery on haddock in 2015 and bycatch should be minimized. A recovery plan should be developed and implemented as a prerequisite to reopening the directed fishery. All catches are assumed to be landed.

Other considerations

MSY approach

Based on stochastic simulations in 2012 MSY preliminary analyses suggested an F_{MSY} = 0.25. Work is still needed to confirm these analyses. Using this F_{MSY} value, and given that SSB in 2015 is estimated below MSY $B_{trigger}$, fishing mortality should be reduced further. F in 2015 should be no more than $F_{MSY} \times B_{2014}$ / MSY $B_{trigger}$, however, because the current biomass is estimated to be below B_{lim}. ICES recommends no directed fishing on haddock in 2015 and recommends that measures are put in place that will minimize bycatches of haddock in other fisheries. A recovery plan should be developed and implemented as a prerequisite to reopening the directed fishery.

Precautionary approach

Given the recent poor recruitment and the low SSB, the forecast indicates that even a zero fishing mortality in 2015 will not result in getting the stock above B_{pa} in 2016. There should therefore be no directed fishery on haddock. Measures should be put in place to minimize bycatches of haddock in other fisheries. A recovery plan should be developed and implemented as a prerequisite to reopening the directed fishery.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

7.4 Saithe (*Pollachius virens*) in Division Vb (Faroe saithe).

FISHERIES: Saithe are mainly caught in a directed trawl fishery (pair and single trawlers as well as jiggers), with bycatches of cod and haddock. Landings are predominantly Faroese (>95%), with only low EU landings. Landings have fluctuated between 20,000t and 60,000 t between 1965 and 2004. Since the record highest landings of 68,000 t in 2005, landings have dropped to 44,000 t in 2010. Total landings in 2011 were around 30,000 t. Total landings in 2012 were 35500 t, of which 92% was taken by pair trawlers, 2.3% by single trawlers, and 5.6% by jiggers. Total catch in 2013 was around 26,000 t, of which 94% was taken by pair trawlers, 2% by single trawlers, and 4% by jiggers and other fishing fleets. Limited sampling in the blue whiting fishery in Faroese waters indicates that bycatches of saithe have been minor since the mandatory use of sorting grids was introduced from 15 April 2007 in the areas west and northwest of the Faroe Islands.

The management is by effort restrictions through individual transferable days introduced in 1996. The fishing law also prescribes area closures and fleet specific catch compositions of cod, haddock, saithe, and redfish.

SOURCE OF MANAGEMENT ADVICE: The management advisory body is ICES. The advice is based on an age-based assessment (XSA) using commercial landings and age disaggregated data from pair trawlers series combined with survey data. There are no discards data, but discarding is not considered a major problem in this fishery.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	55 000 t.	Breakpoint in segmented regression.
	F_{MSY}	0.30	Stochastic simulations (2014).
Precautionary Approach	B_{lim}	Undefined.	
	B_{pa}	55 000 t.	B_{loss} in 2011.
	F_{lim}	Undefined.	
	F_{pa}	0.30	Consistent with 2013 estimate of F_{med}.

(last changed in 2014)

MANAGEMENT AGREEMENTS: A management system based on number of fishing days, closed areas, and other technical measures was introduced in 1996 to ensure sustainable demersal fisheries in Division Vb. This was before ICES introduced precautionary approach (PA) and MSY reference values, and at that time it was believed that the purpose was achieved if the total allowable number of fishing days was set such that on average 33% in numbers of the saithe exploitable stock would be harvested annually. This translates into an average F of 0.45, above both the new F_{pa} = 0.30 and F_{MSY} = 0.30. ICES considers this to be inconsistent with the PA and the MSY approaches. At present, there is no explicit management plan for this stock. However, a group representing the Ministry of Fisheries, the Faroese industry, and the Faroe Marine Research Institute has proposed a management plan based on general maximum sustainable yield (MSY) principles developed by ICES. The MSY $B_{trigger}$ has been defined at 55 kt (the former B_{pa}) and F_{MSY} = 0.30. If the SSB declines below the MSY $B_{trigger}$, the fishing mortality will be reduced by the relationship $F_{MSY} \times B_{act}/B_{trigger}$ until the SSB has increased again above the MSY $B_{trigger}$ and is thereafter kept at F_{MSY}.

STOCK STATUS:

F (Fishing Mortality)				
	2011	2012	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa})	✗	✗	✗	Harvested unsustainably

SSB (Spawning-Stock Biomass)				
	2012	2013	**2014**	
MSY ($B_{trigger}$)	✗	✓	✓	Above trigger
Precautionary approach (B_{pa})	✗	✓	✓	Full reproductive capacity

SSB has decreased substantially since 2005. In 2013 SSB is estimated at around 60 kt, above MSY $B_{trigger}$ = 55 kt. Predicted recruitment in 2013 was above average (31 million). Fishing mortality has decreased from 2012 to 2013 due to decreasing landings and is estimated at F(2013) = 0.45 and well above F_{MSY} = 0.30.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that effort should be reduced such that fishing mortality in 2015 will be no more than F_{MSY} = 0.30, corresponding to a 44% reduction in the present fishing mortality. All catches are assumed to be landed.

Other considerations

MSY approach

Following the ICES MSY framework implies that fishing mortality in 2015 should be no more than F_{MSY} = 0.30, resulting in a reduction of 44% in the present fishing mortality.

Precautionary approach

As F_{pa} equals F_{MSY}, advice under the precautionary approach is the same as under the MSY approach this year.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. STECF notes that the advice to fish at F=0.3 implies catches in 2015 of 26,000 t.

STECF notes that this stock is managed by an effort management system and that no TAC is set. There are no incentives to discard fish under the effort management system. STECF also notes that a management plan based on MSY principles has been developed but not yet discussed by the political system. STECF also notes that (given efficient effort control) the proposed Faroese management plan is consistent with the objective of achieving F_{MSY}.

8 WIDELY DISTRIBUTED AND MIGRATORY STOCKS

8.1 European *eel* (*Anguilla anguilla*)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The European eel (*Anguilla anguilla* (L.)) is found and exploited in fresh, brackish and coastal waters in almost all of Europe, in northern Africa and in Mediterranean Asia. Eel fisheries are found throughout the distribution area. Fisheries are generally organised on a small scale (a few fishermen catching 1-5 tonnes per year) and involve a wide range of gears. The fisheries are managed on a national (or lower, regional or catchment) level. Landings peaked around 1965 at 40,000 tonnes, since when a gradual decline occurred to a level of 20,000 tonnes in the late 1990s, but throughout the decades, landing statistics cover only about half the true catches. Recent years show a rapid decline in reported catches, to below 10,000 tonnes. Recruitment remained high until 1980, but declined afterwards, to a level of only 2 % of former levels in 2001, and has remained low since. Aquaculture of wild-caught recruits (glass eel) has been expanding since 1980, in Europe as well as in eastern Asia (using European glass eel). Other anthropogenic factors (habitat loss, contamination and transfer of diseases) have had negative effects on the stock, most likely of a magnitude comparable to exploitation. In 2007, eel was included in CITES Appendix II that deals with species not necessarily threatened with extinction, but in which trade must be controlled in order to avoid utilization incompatible with their survival. The listing was due to be become effective in March 2009.

SOURCE OF MANAGEMENT ADVICE: Management advice has been provided by ICES and FAO/EIFAC. The joint ICES/EIFAC working group is the main assessment body.

STOCK STATUS:

Indications are that the eel stock remained in a critical state in 2012. Abundance of all stages of eel (glass eel, yellow eel, and silver eel) is at an historical minimum. The recruitment index (five year average) is currently at its lowest historical level for the North Sea (at less than 1% of the maximum observed value) and around 5% in the rest of its European distribution ('Elsewhere Europe') area with respect to 1960-1979. In 2012, recruitment for the series outside the North Sea ('Elsewhere Europe') has increased and returned to the level observed in 2007-2008. Recruitment of yellow eel has been declining continuously since the 1950s.

Stock indicators in the national eel management plans submitted in 2008 indicated that anthropogenic mortality was above the limit implied by EC Regulation No. 1100/2007 (EC, 2007). According to the information provided in the Eel Management Plans progress reports reviewed by ICES in 2012, in most Eel Management Units (EMUs), depending on EMU conditions, progress has been made in implementing eel-specific management measures for commercial and recreational fisheries, hydropower, pumping stations and obstacles, restocking, management measures on habitat, and in a few cases predator control. Management measures related to fisheries have most often been fully implemented while other management measures have often been postponed or only

partially implemented. Most increases in silver eel escapement since the implementation of management plans have been achieved by management measures addressing the commercial and recreational fisheries on silver eel. ICES also consider that extending actions that have proven successful, rather than pursuing untried actions or those difficult to implement, will reduce the risk of continued underachievement.

In 2007, eel was included in CITES Appendix II that deals with species not necessarily threatened with extinction, but in which trade must be controlled to avoid utilization incompatible with the survival of the species (see http://www.cites.org/eng/disc/how.shtml). The listing was implemented in March 2009. Eel was listed in September 2008 as critically endangered in the IUCN Red List.

REFERENCE POINTS: Exploitation that leaves 30% of the virgin spawning-stock biomass is generally considered to be a reasonable target for escapement. Due to the uncertainties in eel management and biology, ICES proposed a limit reference point of 50% for the escapement of silver eels from the continent in comparison to pristine conditions (ICES, 2003). This is higher than the escapement of at least 40% "pristine" set by the EC Regulation for the escapement of silver eels. ICES has evaluated the conformity of country management plans with EC Regulation 1100/2007 (ICES Advice Reports 2009 and 2010, Technical Services), but it has not evaluated the consistency of the regulation itself with the precautionary approach. ICES will undertake such an evaluation based on country reports under EC Regulation 1100/2007.

MANAGEMENT OBJECTIVES: A management framework for eel was established in 2007 through an EC Regulation (EC No. 1100/2007; EC, 2007). The objective of this regulation is the protection, recovery, and sustainable use of the stock. To achieve the objective, Member States have developed eel management plans for their river basin districts, designed to reduce anthropogenic mortalities and increase silver eel biomass.

The objective of the national eel management plans is to provide, with high probability, a long-term 40% escapement to the sea of the biomass of silver eel, relative to the best estimate of the theoretical escapement in pristine conditions (i.e. if the stock had been completely free of anthropogenic influences). ICES has evaluated the conformity of the national management plans with EC Regulation No. 1100/2007 (ICES Advice Reports 2009 and 2010, Technical Services), but it has not evaluated the consistency of the regulation itself with the precautionary approach. ICES will undertake such an evaluation based on the national reports in accordance with EC Regulation No. 1100/2007 (EC, 2007).

A coordinated approach to planning, data workshops, and stock assessment is needed to take full advantage of the 2012 reporting by Member States on monitoring, effectiveness, and outcome of the national eel management plans. The subsequent statistical and scientific assessment will include an opinion by STECF as envisaged by the EU. Independent access to the raw data, biomass, and mortality estimates (see supporting information) provided by the Member States will be required to undertake the statistical and scientific assessments of the reliability and accuracy of the estimates.

RECENT MANAGEMENT ADVICE: The status of eel remains critical and urgent action is needed. ICES reiterates its previous advice that all anthropogenic mortality (e.g. recreational and commercial fishing, hydropower, pollution) affecting production and escapement of eels should be reduced to as close to zero as possible until there is clear evidence that both recruitment and the adult stock are increasing.

Given the current record-low abundance of glass eels, ICES reiterates its concern that glass eel stocking programmes are unlikely to contribute to the recovery of the European eel stock in a substantial manner. The overall burden of proof should be that stocking will generate net benefits, in terms of contributions to silver eel escapement and spawning potential. Prior to stocking, or for continuing existing stocking, a risk assessment should be conducted, taking into account fishing, holding, transport, post-stocking mortalities, and other factors such as disease and parasite transfers.

To facilitate stock recovery all catches of glass eel should be used for stocking. Stocking should take place only where survival to the silver eel stage is expected to be high and escapement conditions are good. This means that stocking should not be used to continue fishing and stocking should only take place where all anthropogenic mortalities are low.

STECF COMMENTS: STECF agrees with ICES assessment of the status of the stock and the ICES advice.

8.2 Hake (*Merluccius merluccius*) in Division Vb (1), VI and VII, VIII and XII, XIV (Northern hake)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Hake is caught in mixed fisheries together with megrim, anglerfish, and *Nephrops*. Discards of juvenile hake can be substantial in some areas and fleets. An important increase in landings has occurred in the northern part of the distribution area (Division IIIa, and Subareas IV and VI) in recent years. Several changes in fishing technology have occured in the fishery in recent years : increased mesh sizes in several gears, introduction of the high vertical opening trawls in the mid-1990s, and introduction of selective gears in the *Nephrops* trawl fishery of the Bay of Biscay (square mesh panel). Total landings in 2012 = 75.2 kt (20% trawl, 21% gillnet, 18% longline, and 41% unspecified gears). Discards of 14.6 kt (16% of catches). Discard data are only available for some of the fleets and not all data are included in the assessment.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. The advice is based on a length-based assessment using commercial catch data and 4 survey series. This stock was benchmarked in 2010 and a further benchmark is scheduled for 2014.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.24	$F_{30\%SPR}$ (Section 9.3.2.1 in ICES, 2010).
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(unchanged since: 2010)

MANAGEMENT AGREEMENT: A recovery plan was agreed by EU in 2004 (EC Reg. No. 811/2004). The aim of the plan is to increase the SSB to above 140 000 t with a fishing mortality (F_{MP}) of 0.25, constrained by a year-to-year change in TAC of 15% when SSB is above 100 000 t. This plan has not been evaluated by ICES. At present (2011) the SSB is estimated to be above 140,000 t, but the reference points used as basis for that recovery plan are not considered valid anymore. The application of a new assessment method has, however, resulted in a change in the perception of the historical stock and the previous defined precautionary reference points, on which the recovery plan is based, are no longer appropriate.

A proposal for a long-term plan has been put forward by the EU in 2009 (COM(2009) 122 final). The aim of the proposal is to reach maximum sustainable yield.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✗	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	↗	↗	✓	Above poss. reference points

The spawning biomass has been increasing since 2008 and is estimated to be record high in 2013. Fishing mortality has decreased sharply in recent years and was equal to the F_{MSY} proxy in 2011 and 2012. Recruitment fluctuations appear to be without substantial trend over the whole series. After low recruitments in 2009, 2010, and 2011, the last recruitment (2012) is estimated to be the highest in the time-series.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that landings should be no more than 81,846 t in 2014. Even though some discards are included in the assessment, the total amount of discards cannot be quantified. Therefore total catches cannot be calculated.

Other considerations

MSY approach

Because MSY $B_{trigger}$ has not been identified for this stock, the ICES MSY approach has been applied without considering SSB in relation to MSY $B_{trigger}$.

Following the ICES MSY approach implies fishing mortality at F_{MSY} = 0.24, resulting in catches of no more than 84,111 t in 2014. This is expected to lead to an SSB of 333 kt in 2015. If discard rates do not change, this implies landings of no more than 81,846 t in 2014.

Not all discards are accounted for in the model and in the forecast, and therefore cannot be quantified even though they are substantial (in 2012 other observed, but also partial, discards accounted for 10% by weight of the total catch).

Management plan(s)

The current recovery plan (EC Reg. No. 811/2004) uses target values based on precautionary reference points that are no longer appropriate.

Additional considerations

Discards of juvenile hake can be substantial in some areas and fleets. The spawning-stock biomass and the long-term yield can be substantially improved by reducing mortality of small fish. This could be achieved by measures that reduce unwanted bycatch through shifting the selection pattern towards larger fish. TACs have been ineffective in regulating the fishery in recent years as landings greatly exceeded the TACs.

Hake in the ICES area is managed and assessed as two separate stocks. There is no biological basis for the current ICES stock definition of northern and southern hake. These stocks have similar biology with an unknown degree of mixing.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advised landings for 2014 of 81,846 t. Given that total discards are not accounted for in the assessment model and catch forecast, the predicted catch of 84,811 t is an underestimate.

STECF also agrees with ICES that effective measures to reduce discarding are also needed, given the substantial discards of juvenile hake in some areas and fleets.

Request to ICES for an in-year revision of the 2013 TAC.

STECF notes the ICES response to the Commission's request for an opinion on the outcome of an in year revision for northern hake (ICES Advice 2013, Book 11, section 11.2.1.2).

STECF agrees with logical explanations given in the ICES response and with the ICES recommendation that the 2013 TAC should not be increased.

8.3 Blue whiting (*Micromesistius poutassou*) in ICES subareas I-IX, XII & XIV

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Blue whiting is exploited mainly by fleets from Norway, Russia, the Faroe Islands, and Iceland but the Netherlands, Scotland, Denmark, Ireland, Sweden, Germany and Spain also take substantial catches. The fishery for blue whiting was fully established in 1977. The Northern blue whiting stock is fished in Subareas II, V, VI, and VII and most of the catches are taken in the directed pelagic trawl fishery in the spawning and post-spawning areas (Divisions Vb, VIa,b and VIIb,c). Catches are also taken in the directed and mixed fishery in Subarea IV and Division IIIa, and in the pelagic trawl fishery in the Subareas I and II, in Divisions Va, and XIVa,b. The fisheries in the northern areas have taken 330 000 t to 640,000 t per year in the first half of the nineties, after which landings increased to close to 1 000 000 t in the latter part of the decade. Landings have been above one million tonnes for most years between 1998 and 2008, with 2003 and 2004 having recorded the highest catches (>2,300,000 t). Since 2009 landings have been dropping with 2012 being the second lowest in the time series. In the southern areas (Subarea VIII, IX, Divisions VIId,e and g-k) catches have been stable around 30 000 t between 1987 and 2011 with the exception of 2004 when 85,000 t were recorded and in 2007 when landings were less than 18 000 t. In Division IXa blue whiting is mainly taken as bycatch in mixed trawl fisheries.

Total landings over all areas decreased drastically from 1.25 million t in 2008 to 104 thousand t in 2011.

SOURCE OF MANAGEMENT ADVICE: The main body for management advice is ICES. The assessment is based on catch-at-age data from commercial catches in 1981–2011 and one international blue whiting spawning stock survey (IBWSS) 2004–2013. The IBWSS survey is the only survey that covers almost the entire distributional area of the spawning stock.

Due to the large uncertainties in the 2010 survey data the IBWSS index has been excluded from the assessment since 2011, because the survey in 2010 is believed to have missed significant concentrations, making it not comparable with the remainder of the time-series.

Limited information was available on discarding and discards were therefore not included in the assessment. However, discarding is considered to be minor.

REFERENCE POINTS:

	Type	*Value*	*Technical basis*
Management plan	SSB_{MP}	2.25 million t	B_{pa}
	F_{MP}	0.18	Management strategy evaluation conducted in 2008
MSY approach	MSY $B_{trigger}$	2.25 million t	B_{pa}
	$F_{0.1}$	0.22	Yield per recruit
	F_{MSY}	0.30	Simulations in 2013
Precautionary approach	B_{lim}	1.50 million t	Approximately B_{loss}
	B_{pa}	2.25 million t	B_{lim} exp(1.645 × σ), with σ = 0.25.
	F_{lim}	0.48	Equilibrium stochastic simulations
	F_{pa}	0.32	Based on F_{lim} and assessment uncertainties

(unchanged since: 2013)

F_{MSY} = 0.30 gives a high yield and a low risk of SSB< B_{lim}.

MANAGEMENT AGREEMENT: A management plan was agreed by Norway, the EU, the Faroe Islands, and Iceland, and subsequently endorsed by NEAFC in 2008. The plan uses i) a target fishing mortality (F = 0.18) if SSB is above B_{pa}, ii) a linear reduction to F = 0.05 if SSB is between B_{pa} and B_{lim}, and iii) F = 0.05 if SSB is below B_{lim}. ICES has evaluated the plan in 2008 and concluded that it is in accordance with the precautionary approach. Work is underway to evaluate a NEAFC request concerning an alternative management plan. ICES will issue advice in advance of WGWIDE 2013.

For assessment purposes ICES considers blue whiting in ICES Subareas I–IX, XII, and XIV as a single stock.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MP})	✗	✓	✓	Below target

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MP})	✓	✓	✓	Above trigger

SSB has almost doubled from 2010 (2.9 million tonnes) to 2013 (5.5 million tonnes) and is well above B_{pa} (2.25 million tonnes). This increase is due to the lowest Fs in the time-series in 2011 and 2012, in combination with increased recruitment since 2010.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the management plan agreed by Norway, the EU, the Faroe Islands, and Iceland that landings in 2014 should be no more than 948 950 tonnes. All catches are assumed to be landed.

Other considerations

Management plan

The management plan agreed by Norway, EU, the Faroe Islands, and Iceland in November 2008 implies a TAC of 949 000 tonnes in 2014, compared to 643 000 tonnes in 2013. This is expected to lead to an increase in SSB in 2015 to 6.96 million tonnes, which is above SSB_{MP}.

MSY approach

Following the ICES MSY framework implies a TAC of 1 502 000 t in 2014 based on a fishing mortality at F_{MSY} = 0.30. This is expected to lead to a decrease in SSB in 2015 to 6.42 million tonnes, which is above MSY $B_{trigger}$ (2.25 million tonnes).

PA approach

Following the ICES precautionary approach implies a TAC of 1 588 000 tonnes in 2014 based on a fishing mortality at F_{pa} = 0.32. This is expected to lead to a decrease in SSB in 2015 to 6.33 million tonnes, which is above B_{PA} (2.25 million tonnes).

Additional considerations

Recruitment (age 1) is estimated significantly higher in 2011 - 2013 than in the years 2007–2009 with the historically low recruitments. Information from surveys and the fishery indicates a steep increase in recruitment in the two most recent years. Also, indices suggest that recruitment (age 1) in 2012 is at a similar or higher level.

There are uncertainties about the stock structure even though ICES evaluated available evidence on sub-stock structure and came to the conclusion that there is no scientific evidence in support of multiple stocks with distinct spawning locations or timings. The emerging picture is one of a single stock whose large-scale spatial spread varies as a function of hydrographic conditions and total abundance; this is commonly described as an abundance–occupancy relationship. Further, there seem to be a number of core nursery and feeding areas with marginal areas being occupied at times of high stock abundance. As a result, ICES considers blue whiting in ICES Subareas I–IX, XII, and XIV as a single stock for assessment purposes.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that the provisions of the management plan agreed by the EU, Norway, Faroe Islands and Iceland prescribe that landings for 2014 should be no greater than 948,950 tonnes

8.3.1 Blue whiting (*Micromesistius poutassou L.*) in Sub -areas IIa(1)-North Sea (1)

Blue Whiting in these sub-areas is assessed together with all other areas as a single stock. See section 8.3.

8.3.2 Blue whiting (Micromesistius *poutassou L.*) in Sub -areas Vb(1),VI,VII

Blue Whiting in these sub-areas is assessed together with all other areas as a single stock. See section 8.3.

8.3.3 Blue whiting (Micromesistius *poutassou L.*) in Sub -areas VIIIabd

Blue Whiting in these sub-areas is assessed together with all other areas as a single stock. See section 8.3.

8.3.4 Blue whiting (*Micromesistius poutassou L.*) in Sub -areas VIIIe

Blue Whiting in these sub-areas is assessed together with all other areas as a single stock. See section 8.3.

8.3.5 Blue whiting (*Micromesistius poutassou L.*) in Sub -areas VIIIc, IX, X

Blue Whiting in these sub-areas is assessed together with all other areas as a single stock. See section 8.3.

8.4 Horse *mackerel* (*Trachurus trachurus*) in ICES Divisions IIa, IVa, Vb, VIa, VIIa-c,e-k and VIIIa-e (western *stock*)

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Catches of 'Western' horse mackerel increased in the 1980s with the appearance of the extremely strong 1982-year-class. Changes in the migration pattern became evident at the end of the 1980s when the largest fish in the stock (mainly the 1982-year-class) migrated into Divisions IIa and IVa during the 3rd and 4th quarters. Following the changes in migration, a target fishery on horse mackerel developed in Division IVa by the Norwegian purse seiners. Most catches by other countries were taken in Sub-areas VI, VII and Divisions VIIIa-e.

The catches in Division IVa have dropped considerably since 1996 and Western horse mackerel has in recent years been taken in a variety of fisheries exploiting juvenile fish for the human consumption market (with mid-aged fish mostly for the Japanese market), and older fish either for human consumption purposes (mostly for the African market) or for industrial purposes. Since 2003, the fishery has been more directed toward younger fish (ages 1–3) than fish of ages 4 to 8. In 2012, fishing mortality on younger ages reached a record-high level.

The proportion of catches (in weight) in the areas where juveniles are distributed increased gradually from about 40% in 1997 to about 65% in 2003, but declined to 40% in 2005. Since 2005, there have been no obvious changes in fishing patterns. Overall catch levels increased from 123 000 t in 2007 to 218 000 t in 2010. The estimated catches for 2012 amount to 173 000 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. There is large uncertainty in the absolute estimates of SSB. The only fishery-independent information for this stock is a measure of egg production from surveys conducted every three years. The assessment assumes that fecundity at size varies with no trend over time. If this assumption is incorrect then the assessment results may be biased.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.13	$F_{0.1}$ from the yield-per-recruit
Precautionary Approach	B_{lim}	Not defined.[1)]	
	B_{pa}	Not defined.[1)]	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(unchanged since: 2013)

[1)] Previous PA biomass reference points were considered not consistent with the perceived state of the stock, the exploitation rate, and the evaluation of MSY reference points.

MANAGEMENT AGREEMENT:

In 2007, a management plan based on the triennial egg survey was proposed by the Pelagic RAC and has been used by the EU since 2008 to set the EU TAC. The management plan was initially appraised by ICES in 2007 and was deemed to be precautionary in the short term only, because some relevant scenarios were not evaluated. Further evaluation in 2013 suggests that in its current configuration the HCR is not robust to more than 2 years of very low recruitment.

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY (F_{MSY})	✓	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-Stock Biomass)				
	2011	2012	**2013**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	↘	↘	↘	declining

The SSB, which has varied between 0.65 and 1.72 million tonnes during 1995–2012, is estimated to be at 0.84 million tonnes in 2013. Fishing mortality has been increasing since 2007 and is now above F_{MSY}. Recruitment has been low from 2004 onwards.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that landings in 2014 should be no more than 110 546 t. Even though some discards are included in the assessment, the total amount of discards cannot be quantified. Therefore total catches cannot be calculated.

Other considerations

MSY approach

Following the ICES MSY approach requires fishing mortality to be reduced to 0.13 in 2014, resulting in catches of less than 110 546 tonnes in 2014. This is expected to lead to an SSB of 554 kt in 2015.

PA approach

There are no PA reference points defined for this stock.

Management plans

ICES does not advise according to the management plan because it has recently concluded that, in its current configuration, the HCR is not consistent with the PA. However, this work also showed that the plan could be made consistent with the PA through the introduction of a biomass trigger in the HCR. Thus, ICES advises that these modifications to the HCR would need to be made before the plan is used to give catch advice.

Additional considerations

Note that the TAC advice based on the MSY approach results in a lower SSB in 2015 than the lowest SSB in the time-series, and it is uncertain if this low SSB will lead to reduced recruitment.

The TAC should apply to all areas where Western horse mackerel is caught. The advice for horse mackerel assumes that all landings are counted against the TAC for each stock separately.

ICES advises that the management areas correspond to the distribution areas which include all EU, Norwegian, and Faroese waters where horse mackerel are caught. The management areas for the North Sea and Western horse mackerel were changed in 2010 to more appropriately reflect the stock distributions.

Western horse mackerel are taken in a variety of fisheries for human consumption with juvenile fish directed mostly at the Japanese market, and large fish at the African market. Since 2003, the fishery has been more directed toward younger fish (ages 1–3) than fish of ages 4 to 8. In 2012, fishing mortality on younger ages reached a record-high level

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2014 that to comply with MSY objectives, landings should be no greater than 110,546 tonnes.

STECF notes that the provisions of the management plan proposed by the Pelagic RAC and used by the EU since 2008 to set the EU TAC, prescribe that landings in 2014 should be 137,524 t.

8.5 Northeast Atlantic Mackerel (*Scomber scombrus*) - combined Southern, Western and North Sea spawning components)

FISHERIES AND STOCK: ICES currently uses the term "Mackerel in Northeast Atlantic" to define the mackerel present in the area extending from ICES Division IXa in the south to Division IIa in the north, including mackerel in the North Sea and Division IIIa. Catches cannot be allocated specifically to spawning area components on biological grounds but by convention, catches from the Southern and Western components are separated according to the areas in which these are taken.

To keep track of the development of spawning biomass in the different spawning areas, mackerel in the Northeast Atlantic stock are divided into three area components: the Western Spawning Component, the North Sea Spawning Component**,** and the Southern Spawning Component. The Western Component is defined as mackerel spawning in the western area (ICES Divisions and Subareas VI, VII, and VIII a, b, d, e). This component currently accounts for ~75% the entire Northeast Atlantic stock. Similarly, the Southern Component (~22%) is defined as mackerel spawning in the southern area (ICES Divisions VIIIc and IXa). Although the North Sea component has been at an extremely low level since the early 1970s, ICES considers that the North Sea Component (~3%) still exists as a discrete unit. This component spawns in the North Sea and Skagerrak (ICES Subarea IV and Division IIIa). Current knowledge of the state of the spawning components is summarised below.

Traditionally, the fishing areas with higher catches of mackerel have been in the northern North Sea (along the border of Divisions IVa and IIa), around the Shetland Islands, and off the west coast of Scotland and Ireland. The southern fishery off Spain's northern coast has also accounted for significant catches. In recent years, significant catches have also been taken in Icelandic and Faroese waters, areas where almost no catches were reported prior to 2008. In 2012, catches in this area constituted approximately half of the total reported landings. Catches from Greenland were reported for the first time in 2011, and have increased in 2012. In the Icelandic and Faroese fisheries, in the northwestern part of the distribution area, mackerel are caught together with herring. In the southern part of the distribution area, Atlantic mackerel (Scomber scombrus) can be caught together with Spanish mackerel (Scomber colias). Catches of both species are reported separately.

Catch distribution: Total catch (2012) = 893 kt, where ~98.3% are landings (pelagic trawls, purse-seine nets, and handlines) and 1.7% discards (the latter is only available from a limited number of fleets and considered to be an underestimate).

SOURCE OF MANAGEMENT ADVICE: The advisory body is ICES.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
Management plan	$SSB_{trigger}$	2.2 million t	Medium-term simulations conducted in 2008. **Revision required[1].**
	F_{target}	0.20–0.22	Medium-term simulations conducted in 2008. **Revision required[1].**
MSY approach	MSY $B_{trigger}$	2.36 million t	Proxy based on B_{pa}. **Revision required[2].**
	F_{MSY}	0.25	Stochastic simulation conducted at benchmark assessment in 2014.
Precautionary approach	B_{lim}	1.84 million t	B_{loss} in 2002 from 2014 benchmark assessment.
	B_{pa}	2.36 million t	$\exp(1.654*\sigma)*B_{lim,}$ $\sigma = 0.15$.
	F_{lim}	0.39	F_{loss}, the F that on average leads to B_{lim}.
	F_{pa}	0.26	F that on average leads to B_{pa}.

(Last changed in: 2014)

[1] Under evaluation.

[2] To be revised at WGWIDE after the management plan evaluation.

MANAGEMENT AGREEMENT: A management plan was agreed by Norway, Faroe Islands, and the EU in October 2008. ICES has evaluated the plan and concluded that it was precautionary (ICES, 2008). However, since 2009, there has been no international agreement on TAC. Advising according to new assessment using the management plan is still considered precautionary, even though the plan may no longer result in a long-term maximization of the yield. EU, Norway, and the Faroes have approached ICES with a draft request on a long-term management plan evaluation. ICES is currently organizing an evaluation.

STOCK STATUS:

Fishing pressure				
	2010	2011	2012	
MSY (F_{MSY})	✓	✓	✓	Appropriate
Precautionary approach (F_{pa},F_{lim})	✓	✓	✓	Harvested sustainably
Management plan (F_{MGT})	○	✓	✓	Below target

Stock size				
	2011	2012	2013	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Full reproductive capacity
Management plan (SSB_{MGT})	✓	✓	✓	Above trigger

Fishing mortality in 2012 is estimated to be 0.19, below F_{MSY} and F_{pa}. Fishing mortality was above F_{lim} during the early 2000s. SSB has increased considerably since 2002 and remains high, above B_{pa} and MSY $B_{trigger}$. The 2002 and 2006 year classes are the strongest year classes in the time-series. The incoming 2011 year class appears to be above average. There is insufficient information to reliably estimate the size of the 2012 year class in the last year of the assessment time-series and it is replaced by an RCT3 estimate.

RECENT MANAGEMENT ADVICE:

Updated advice for 2014: ICES has updated its Autumn 2013 advice and advises on the basis of the Norway, Faroe Islands, and EU management plan that catches in 2014 should be between 927 000 tonnes and 1 011 000 tonnes. ICES recommends that the management plan should be reviewed and possibly revised to reflect the new perception of the stock and the revised precautionary reference points.

ICES advises that the existing measures to protect the North Sea spawning component should remain in place.

Other considerations

Management plan

A management plan was agreed by Norway, Faroe Islands, and the EU in October 2008. ICES has evaluated the plan and concluded that it was precautionary (ICES, 2008). Advising according to new assessment using the management plan is still considered precautionary, even though the plan may no longer result in a long-term maximization of the yield.. The plan implies a TAC between 927 000 and 1 011 000 tonnes in 2014. This corresponds to a catch increase between 4% and 13% compared to the estimated catches in 2013. Such a TAC would lead to an estimated SSB in 2015 between 4.459 and 4.378 million tonnes. EU, Norway, and the Faroes have approached ICES with a draft request on a long-term management plan evaluation. ICES is currently organizing an evaluation.

MSY approach

Following the ICES MSY framework implies that fishing mortality can be increased to 0.25 (FMSY), resulting in a total catch of 1 134 000 tonnes in 2014. This would lead to an estimated SSB in 2015 of 4.261 million tonnes. Because F is currently below FMSY, following the transition scheme towards the ICES MSY Harvest Control would result in fishing at FMSY.

Precautionary approach

Following the precautionary approach (PA) implies that fishing mortality in 2014 should be no higher than Fpa (F = 0.26), corresponding to a total catch of 1 174 000 tonnes in 2014. SSB in 2015 would remain above Bpa.

STECF COMMENTS: STECF agrees with the ICES assessment and that based on the Norway, Faroe Islands and EU management plan, catches in 2014 should be between 927,000 tonnes and 1,011,000 tonnes.

STECF notes that the 2014 quotas were all set prior to the availability of the above ICES advice based on the 2014 benchmark assessment. EU, Norway, and the Faroe Islands have agreed on a TAC of 1.24 million tonnes for 2014, of which 1 046 560 tonnes is reserved for the three parties. Greenland has declared a catch limit of 100 000 tonnes in its waters, and Iceland a catch limit of 147 721 tonnes for its fisheries. Further significant catches can also be assumed to be taken by Russia. STECF concurs with ICES that if realised catches in 2014 are in line with the sum of the agreed TAC and the unilaterally declared catch limits, fishing mortality in 2014 will exceed both F_{MSY} (F_{MSY} = 0.25) and the precautionary limit for F (F_{pa} = 0.26).

8.6 Striped Red Mullet (*Mullus surmuletus*) in the Northeast Atlantic

Advice for this stock for the years 2013 and 2014 was given in 2012 and the text below remains unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27). Advice for 2015 is not yet available.

FISHERIES AND STOCK: Striped red mullet (*Mullus surmuletus*) is a benthic species. Young fish are distributed in coastal areas, while adults have a more offshore distribution. Recent stock identification studies in European waters show that striped red mullet can be geographically divided into two or three units. Fishery information suggests that the Bay of Biscay could be combined with the Celtic Sea in one unit while the western Channel, eastern English Channel, and the North Sea could form another unit. However, based on otolith shapes, three different units were identified: (i) the Bay of Biscay (north and south); (ii) a mixing zone composed of the Celtic Sea and the western Channel; and (iii) a northern zone comprising the eastern English Channel and the North Sea.

Most of the catch is taken by the French fleet. Other fleets from the Netherlands and the United Kingdom target the English Channel (Divisions VIId, e) and the southern North Sea (Subarea IVb, c). The north of the Bay of Biscay (Divisions VIIIa, b) is exploited by France and Spain. The southern part of the Cantabrian Sea (Division VIIIc) is exploited by Spain and Portugal. Other countries with small catches are Belgium and Ireland. Total landings have fluctuated between 2000 and 3000 tonnes in the last 8 years. In 2010, 60% of the landings originated from Subarea VIII. Most of the catch is

taken by the French and Spanish bottom trawler fleets. In the Bay of Biscay a fly-shooting fisheries has developed recently. Observer information indicates that there is very little discarding (no minimum landing size has been determined).

SOURCE OF MANAGEMENT ADVICE: The main body for management advice is ICES.

REFERENCE POINTS:

No reference points have been defined for this stock.

MANAGEMENT AGREEMENT:

There are no current management agreements. There is no TAC for this species.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-stock Biomass)		
	2010–2012	
Qualitative evaluation	?	Insufficient information

There is limited information to evaluate stock trends. The landings have shown an increase since the mid-1990s and they are now stable and above average (essentially in Subarea VIII). Recruitment indices fluctuate without trend although there is some indication of several large year classes in the early 2000s

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the approach to data-limited stocks that catches should be no more than 2000 tonnes for 2013 and 2014. This is the first year ICES is providing quantitative advice for data-limited stocks.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the average catch of the last three years (2008–2010), corresponding to catches of no more than 2000 t in 2013.

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014

8.7 Red Gurnard (*Aspitrigla cuculus*) in the Northeast Atlantic

Advice for this stock for the years 2015 is the same as that for 2013 and 2014. The text below remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES AND STOCK: Red gurnard (*Aspitrigla cuculus*) is a benthic species widely distributed in the northeast Atlantic from South Norway and north of the British Isles to Mauritania, on grounds between 20 and 250 m. This benthic species is abundant in the Channel and on the shelf west of Brittany. Data are not available to determine stock identity for red gurnard.

Red gurnards are mainly caught by demersal trawlers in mixed fisheries, mostly in Divisions VIId–k and VIIIa,b and in Division IVc. A preliminary analysis has shown that discarding is above 50% of the catch in the English Channel. There are no technical measures specifically dedicated to red gurnard or other gurnard species.

SOURCE OF MANAGEMENT ADVICE: The main body for management advice is ICES.

REFERENCE POINTS: No reference points have been defined for this stock.

MANAGEMENT AGREEMENT:

There are no current management agreements. There is no TAC for this species.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-stock Biomass)		
	2010–2012	
Qualitative evaluation	→	Stable

In the area with the highest abundance (Celtic Sea) the abundance index has fluctuated without a trend since 2002. In the Bay of Biscay the abundance index has also fluctuated without trend, but the 2011 estimate is the highest in the time-series.

Landings data are not available for this species because the landings were reported as one generic category of “gurnards” until 2010. Furthermore, landings data are considered only marginally informative because catches are mainly discarded.

RECENT MANAGEMENT ADVICE: New survey data available for this stock do not change the perception of the stock. Therefore, the advice for this Fishery in 2015 is the same as the advice for 2013 and 2014: “ Based on ICES approach To data limited stocks, ICES advises that catches should be reduced by 20%.

Because the data for catches of red gurnard are considered highly unreliable, ICES is not in a position to quantify the result ".

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

For this stock, the ICES approach to data-limited stocks implies that catches should decrease by 20% in relation to the average catch of the last three years. Because the data for catches of red gurnard are considered highly unreliable, ICES is not in a position to quantify the result.

Additional considerations:

Currently there is no TAC for this species in the ICES area and it is not clear whether there should be one or several management units. There is no minimum landing size.

Higher occurrences of red gurnard with patchy distribution have been observed along the western coast of Ireland and Scotland from the Shetland Islands to the Celtic Sea and the English. The distribution seems continuous from the Celtic Sea into the North Sea and into the Bay of Biscay. Therefore it was decided not to split this species over the different ecoregions.

The biomass indicator from IBTS-Q1 has shown an increased abundance at the northern border of the North Sea, following an expansion of the stock area from west of Scotland. In the Eastern Channel, the CGFS-Q4 indicator has shown a wide fluctuation and a declining tendency since 2009. In western Iberian waters, the PGFS-Q4 indicator fluctuates at a low level.

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014.

8.8 Seabass (*Dicentrarchus labrax*) in the Northeast Atlantic

Advice on Seabass is now given separately by ecoregion (see sections 2.41, 3.32, 4.31, 4.32).

8.9 Boarfish (*Capros aper*) in the Northeast Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: The fishery for boarfish is conducted with pelagic trawls. The catches are currently used for reduction to fish meal and oil, but development of a human consumption market is underway. The majority of landings to date have come from ICES Divisions VIIj (75%) and VIIh (18%) The recent expansion of the fishery was enabled by developments in the pumping technology for boarfish catches. These changes made it easier to pump boarfish ashore. The number of vessels in the fishery has been increasing, although the recent introduction of a TAC is expected to limit further effort expansion

SOURCE OF MANAGEMENT ADVICE: The main body for management advice is ICES.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.23	r/2 from Schaefer surplus production model.
Precautionary reference points		Not defined.	

(Unchanged since 2013)

MANAGEMENT AGREEMENT: There are no current management agreements.

STOCK STATUS:

F (Fishing Mortality)	
	2010–2012
MSY (F_{MSY})	✓ Appropriate

TSB (Total Stock Biomass)	
	2010–2012
Quality evaluation	✓ Above possible reference point

F is below F_{MSY} and biomass is likely to be above any candidate for MSY $B_{trigger}$.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the MSY approach that catches in 2014 should be no more than 133 957 t. If discard rates do not change from the average of the last ten years this implies landings of no more than 127 509 t.

Other considerations

MSY approach

Following the MSY approach implies a fishing mortality at F_{MSY} = 0.23. On this basis, ICES advises that catches in 2014 should not be more than 133 957 t. If discard rates do not change from the average of the last 10 years 2003 to 2012 (6448 t) should be subtracted from this, resulting in landings in 2014 of no more than 127 509 t.

Additional considerations:

Management considerations

The stock appears to be large, widely distributed, and not over-exploited. The FAO gives guidelines on how new and developing fisheries should be dealt with. It is recommended that expansion should only take place in a cautious manner. The overall objective in managing such a new fishery should be to prevent the development of the fleet's capacity outpacing the ability of management to understand the effect of existing fishing effort. In view of the rapid development of the fishery in recent years, a cautious approach is warranted in exploiting boarfish.

In 2010 an interim management plan, proposed by Ireland, included a number of measures to mitigate potential bycatch of other TAC species in the boarfish fishery A closed season from 15 March to 31 August was proposed, as anecdotal evidence suggested that mackerel and boarfish are caught in mixed aggregations during this period. This proposed closed season has been followed by participating vessels on a voluntary basis in 2011 and 2012. A closed season was also proposed in Division VIIg to prevent catches of Celtic Sea herring, known to form feeding aggregations in this region at these times. If catches of a single species other than boarfish totals more than 5% of the total catch in the boarfish fishery, by day and by ICES statistical rectangle, and this species is covered by a TAC, then boarfish fishery must cease in that rectangle. In 2012, a management plan has been proposed by the Pelagic RAC. This includes a nested set of harvest control rules that are designed to deal with whatever level of information is available to assess stock status. This plan has yet to be evaluated.

Bottom trawl survey data suggest a continuity of distribution spanning ICES Subareas V, VI, VII, and VIII. Isolated small occurrences appear in the North Sea (ICES Subarea IV) in some years. An examination of Portuguese groundfish survey data indicated that boarfish are mostly distributed in the

southwest of Portugal, with only rare occurrences in the northern parts. This suggests a potential discontinuity of the distribution of the species between ICES Division VIIIc and the southern part of Division IXa (Cardador and Chaves, 2010). Based on these results, a single stock is considered to exist in ICES Subareas IV, V, VI, VII, and VIII, a broader area than that covered by the current EU TAC.

Regulations and their effects

In 2010, the European Commission notified member states that the mesh sizes of less than 100 mm were illegal and that fisheries for boarfish should not be prosecuted with mesh sizes of less than 100 mm. However, in 2011, the European Parliament voted to change Regulation 850/1998 to allow fishing for boarfish using mesh sizes ranging from 32 to 54 mm.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that to comply with MSY objectives catches for 2014 should be no greater than 133,957t.

STECF agrees that if discard rates do not change from the average of the last ten years this implies landings of no more than 127 509 t.

Request to ICES to evaluate the proposed long-term management plan for boarfish and possible in-year revision of the TAC for 2013.

STECF notes the ICES response to the Commission's request to evaluate the proposed long-term management plan for boarfish and possible in-year revision of the TAC for 2013 (ICES Advice 2013, Book 9, section 9.3.3.6).

STECF agrees with logical explanations given in the ICES response and with the ICES recommendation that Tier 1.1 of the management plan be considered consistent with the PA and MSY approaches for as long as a Category 1 assessment is available.

STECF agrees with the ICES statement that the remaining harvest control rule terms of the proposed management plan cannot be evaluated at the moment. STECF notes that ICES policy, in the absence of a Category 1 assessment, is to use the data-limited stocks (DLS) approach. STECF notes however that the subsequent Tiers of the proposed management plan might be followed, if they resulted in more precautionary management (lower TACs) than those provided for in the DLS approach.

STECF also agrees with the ICES recommendation that an in-year TAC revision is not possible at the moment because the 2013 assessment is the first that is of sufficient quality to be used for advice.

8.10 Spurdog (*Squalus acanthias*) in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Spurdog is a relatively small (<120 cm TL), widely distributed species occurring throughout the ICES area, and also widespread in the NW Atlantic, SW Atlantic and parts of the Pacific (although there is evidence that populations in the NE Pacific are a separate species). Spurdog is one of the most important commercial elasmobranchs, with catches in directed and by-catch fisheries. There have been directed longline and gillnet fisheries in IIa, IVa, VIa, VIIa and VIIb-k and there are by-catches from demersal otter trawl, gillnet and seine fisheries throughout the range of the stock.

The main fishing grounds for Spurdog are: Norwegian Sea (ICES Sub-area II); North Sea (ICES Sub-area IV); NW Scotland (ICES Sub-area VI) and the Celtic Sea (ICES Sub-area VII). Some landings are also from the Skagerrak and Kattegat (ICES Sub-area IIIa) and Iceland (ICES Sub-area V). Spurdog is also taken in small quantities in the Bay of Biscay (ICES Sub-area VIII) and off Greenland.

These last areas are considered to be outside the main area of the North East Atlantic stock, which is considered to be separate from the North West Atlantic stock.

Currently, spurdog is caught primarily by trawlers, gillnetters and (seasonally) by inshore longliners. The larger autoliners that previously targeted spurdog no longer longline for spurdog. Most spurdog are now taken as by-catch in otter trawls, seines and gillnets targeting whitefish, although some inshore fisheries may have had small-scale, local and seasonal directed fisheries for this species prior to the zero TAC.

In the UK (E&W), just over 50% of spurdog landings were taken in line and net fisheries in 2006, with most landings coming from Sub-area VII and in particular from the Irish Sea. About 45% of the Scottish landings originate from demersal trawl fisheries and less than 30% of the Irish landings come from the gill nets and line fisheries.

Landings of this species remain difficult to quantify due to differences in the level to which they are identified in national landing statistics. Landings which are specifically identified as *S. acanthias* probably represent a minimum estimate, while a maximum estimate includes categories such as "Squalidae", "dogfish" or "dogfish and hounds" which may include a number of other species (eg. deep-water squaloids, spotted dogfish, smooth-hounds and tope). The landings of spurdog, although not complete, show a marked decline since the mid-1980s. Up to 60,000t were landed annually in the early 1960s, landings averaged about 35,000t throughout the 1980s, then steadily declined to an average of about 15,000t by the late 1990s. The landings for 2005 were reported to be as low as 5600t and for 2006 at about 3000t, the lowest observed on record.

A TAC was introduced for the EU waters of Subarea IV and Division IIa in 1999. This TAC was reduced from 8870t in 2001 to 1051t in 2006. A by-catch quota of 841t was set in 2007 for IIa (EC) and IV, and at this time spurdog should not have comprised more than 5 % by live weight of the catch retained on board. A TAC (of 2828 t) for I, IIIa, V, VI, VII, VIII, XII and XIV was set for the first time in 2007 , but this was subsequently altered to 2004 t covering only areas I, V, VI, VII, VIII, XII and XIV in 2008. In 2008 there was no TAC for Division IIIa. The TAC for 2010 was set at zero, but with an allowance for bycatches of up to 10% of the 2009 quotas to be landed, as long as the maximum landing length of 100 cm (total length) was respected, and that bycatch comprised less than 10% of the total weight of marine organisms on board the fishing vessel. The bycatch allowance was removed in 2011, and this has resulted in increased discarding of spurdog, of which an unknown proportion is dead.

Norway has a 70-cm minimum landing size, but this measure would not facilitate reducing the exploitation of mature females. In 2007 Norway also introduced a general ban on fishing and landing of spurdog in the Norwegian economic zone and in international waters in ICES areas I-XIV. However, boats less than 28m in length are allowed to fish for spurdog with traditional gears in inshore, territorial waters (within the 4 nm). Spurdog caught as by-catch in other fisheries have to be landed and the Norwegian Fiskeridirektoratet is allowed to stop the fishery when catches reach the last year's level. In 2004, Germany proposed to the EU that spurdog should be listed under Appendix II of CITES (i.e. so that nations involved in the import/export trade would have to show that the harvesting and utilization was sustainable). Sweden recently added spurdog to their national Red List and since April 2011 landings of spurdog are not allowed for either the commercial or recreational fisheries.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. Assessment is an age-length and sex structured model. WGEF has attempted various analytic assessments of NE Atlantic spurdog using a number of different approaches. Although these models have not proved entirely satisfactory (as a consequence of the quality of the assessment input data), these exploratory assessments and survey data all indicate a decline in spurdog.

REFERENCE POINTS:

	Type	Value	Technical basis
MSY Approach	MSY $B_{trigger}$	Not defined.	
	MSY exploitation ratio	0.029	Catch as a proportion of the total biomass, assuming average selection over the last three years, reflecting a non-target selection pattern.
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

STOCK STATUS:

F (Fishing Mortality)				
	2010	2011	**2012**	
MSY Exploitation Ratio	✓	✓	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Undefined

SSB (Spawning-stock Biomass)				
	2010	2011	**2012**	
MSY ($B_{trigger}$)	?	?	?	Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Undefined
Qualitative evaluation	→	→	✗	Below poss. reference points

The stock has suffered a historical high fishing mortality for more than four decades. The spawning biomass and recruitment have declined substantially over the past decades and are currently the lowest observed while exploitation is estimated to be below the MSY exploitation ratio.

RECENT MANAGEMENT ADVICE:

ICES advise on the basis of the precautionary approach that there should be no targeted fishery and that catches in mixed fisheries should be reduced to the lowest possible level. A rebuilding plan should be developed for this stock.

Other considerations

Outlook for 2013 and 2014

No short-term forecast is provided for this stock. The updated assessment does not alter the perception of the stock as being depleted.

Management plans

There is a generic EC Action Plan for the Conservation and Management of Sharks, but no specific management objectives are known.

MSY considerations

Exploitation status is below Fprop,MSY, as estimated from the results of the assessment. However, biomass has declined to record low level in recent years and therefore to allow the stock to rebuild, catches should be reduced to the lowest possible level in 2013 and 2014. 2011 projections assuming status quo Fprop (linked to total assumed catch of 540 t in 2011) suggest that the stock will rebuild by 9–15% of its 2011 level by 2015.

Although MSY $B_{trigger}$ has not been identified for this stock, it is highly likely that SSB is below any candidate MSY $B_{trigger}$.

PA considerations

Given that Spurdog spawning biomass and recruitment are currently the lowest observed and that Spurdog is a long-lived, slow-growing, and late-maturing species and therefore particularly vulnerable to fishing mortality, ICES advises on the basis of the precautionary approach that there should be no targeted fishery in 2013 and that catches in mixed fisheries should be reduced to the lowest possible level.

The stock currently appears stable at a low level, but the recent period of stability is short compared to the longevity of the species. Given this longevity, stock recovery will be slow.

A rebuilding plan should be developed for this stock, noting that the time for recovery will be over a decadal time frame.

Additional considerations:

Analyses of microsatellite data conducted by Verisimmo et al. (2010, a WD submitted to WGEF) found genetic homogeneity between east and west Atlantic spurdog, but the authors suggested this could be accomplished by transatlantic migrations of a very limited number of individuals.

Historically Spurdog were subjected to large targeted fisheries but were also taken as a bycatch in mixed trawl fisheries. An EC TAC covering the entire stock range, was introduced in 2007 and was progressively reduced, and in 2011 TAC=0 extend in 2012. Reports suggest that the zero TAC in 2011 and 2012 have increased the discards of spurdogs in mixed fisheries.

In 2009, a maximum landing length (100 cm) was introduced in EC waters, and this deterred many of the fisheries targeting spurdog. In theory, the maximum landing length of 100 cm will restrict fisheries targeting mature females, but will not impede females being discarded if they are harvested together with smaller individuals (< 100 cm). As the mortality rate of discarded spurdogs is unknown, the maximum landing length alone does not afford complete protection of mature females. Norway has a minimum catch size of 70 cm (first introduced in 1964), and from 2011 no directed fishery.

A rebuilding plan is needed for this stock. Rebuilding measures should incorporate biomass targets and rebuilding timelines. Enhanced data collection schemes should be developed in the form of science–industry collaborations.

Because of the number of assumptions made within the assessment model uncertainty is likely to be underestimated. Estimates of total landings of Northeast Atlantic Spurdog have been used, together

with UK length-frequency distributions. However there are still concerns over the quality of the data as a consequence of (a) uncertainty in the historical level of catches because of misreporting and generic landing categories, (b) lack of commercial length-frequency information for countries other than the UK, and (c) lack of discard information. In addition survey data examined should be extended to cover the whole stock. Future assessments require updated and validated growth parameters (particularly for larger individuals) and better estimates of natural mortality.

STECF COMMENTS: STECF agrees with the ICES advice and notes that any rebuilding plan will require that there is no resumption of a target fishery, and that bycatch is restricted to close to zero for a number of years. Given the longevity and productivity of spurdog, any rebuilding plan will require several decades.

STECF further notes that setting a zero TAC will inevitably result in discards of incidental catches of spurdog, a proportion of which will be discarded dead. Nevertheless, STECF considers that a zero TAC is likely to deter any directed fishery for spurdog and is likely to reduce the exploitation rate on this species.

In response to a request from the Commission STECF undertook a review of a proposal to allow the landing of unintended by-catches of spurdog and the assessment of alternative management measures to the present zero TAC regime (Report of 44th Meeting of the STECF- PLEN-13-03). As part of that review, STECF noted that an update of the assessment used by ICES in its latest advice (ICES, 2012) was carried out in 2013 (ICES, 2013 and De Oliveira *et al.* , 2013). That assessment confirmed that the stock is depleted, but not to the extent estimated in the previous (2012) assessment. Model projections show that a TAC up to 1422 t (the last non-zero TAC) would allow the population to grow in the future at a similar rate to that forecast with a zero TAC (i.e. 28% increase in biomass in 10 years instead than 33% with a zero TAC). Nevertheless, STECF concludes that all of the proposed alternative measures reviewed are likely to be less effective at achieving recovery of spurdog than maintaining the current zero TAC.

8.11 Basking *shark* (*Cetorhinus maximus*) in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: According to WGEF, a single stock of basking sharks *Cetorhinus maximus* exists in the ICES area. The stock structure is unknown. In the absence of such information, the basking shark population in the Northeast Atlantic is presumed to be a single stock. There are indications that this stock has connectivity with the western and southern Atlantic.. A genetics study underway in the UK aims to differentiate distinct stocks globally. They are known to congregate in areas with a high zooplankton biomass (e.g. fronts) and, therefore, may be locally important, but the locations of these areas are variable.

Biological data are limited, although all lamniform sharks have a very low fecundity and late age at maturity and they are likely to be sensitive to fishing mortality.

There have been directed fisheries for this species by Ireland, the UK, and Norway. The last directed fishery was that of Norway, and was prosecuted in II, IV, VI and VII. The Norwegian fleet has prosecuted local fisheries from the Barents Sea to the Kattegat, as well as more distant fisheries ranging across the North Sea and as far as the south and west of Ireland, Iceland and Faeroe. The geographical and temporal distribution of the Norwegian domestic basking shark fishery changes markedly from year to year. Recent studies have highlighted the important role that oceanographic conditions can play in affecting basking shark distribution.

Since the mid-1940s, catches have varied considerably. In the late 1970s catches were about 10000t, in early 1980s about 4000t and in recent years a serious decline has been registered with catches ranging between 77t and 293t in the last eight years. Catches in 2005 were 221t and in 2006 16t (Norwegian by-catch) which was considerably less than in 2005. It is not known whether this decrease is related to marked price reductions, or that the release of live specimens has increased, or because actual abundance has declined. 2011 landings

Limited quantitative information exists on basking shark discarding in non-directed fisheries. However, anecdotal information is available indicating that this species is caught in gillnet and trawl fisheries in most parts of the ICES area. Most of this by-catch takes place in the summer months as the species moves inshore. The total extent of these catches is unknown. Out of 15 reported instances of incidental bycatch in French fisheries (2009-2011), four were released alive. From Norway, there were 11 records of incidental bycatch (2006-2012), of which two were released alive and two were landed. Other sources of mortality (e,g, ship strikes) are unknown Other sources of mortality (e,g, ship strikes) are unknown.. The requirement for EU fleets to discard all basking sharks caught as by-catch means that information cannot be obtained on these catches. A better protocol for recording and obtaining scientific data from by-catches is necessary for assessing the status of the stock.

Since 2006, there is no targeted fishery for basking sharks in Norway, UK or Ireland. Based on ICES advice, Norway banned all directed fisheries for basking shark in 2006, but dead or dying by-catch specimens can be landed and sold as before. The basking shark has been protected from killing, taking, disturbance, possession and sale in UK territorial waters since 1998. In Sweden it is forbidden to fish for or to land basking shark. Since 2002, there has a complete ban on the landings of basking shark from within the EU waters of ICES Sub-areas IV, VI and VII (Annex ID of Council Regulation (EC) 2555/2001). Since 2007, the EU has prohibited fishing for, retaining on board, transhipping or landing basking sharks by any vessel in EU waters or EU vessels fishing anywhere (Council regulation (EC) No 41/2006).

Basking shark was listed on Appendix II of the Convention on International Trade in Endangered Species (CITES) in 2002, on Appendices I and II of the Convention on the Conservation of Migratory Species (CMS) in 2005, on Annex I, Highly Migratory Species, of the UN Convention on the Law of the Sea (UNCLOS) and on the OSPAR (Convention on the protection of the marine environment of the north-east Atlantic) list of threatened and/or declining species in 2004.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. There is no assessment of this stock. The evaluation is based on landings data and anecdotal information.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

(unchanged since: 2010)

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2010–2012	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Likely below poss. reference points

No population estimate or fishery-independent survey information are available. Reference points cannot be defined.

Available landings and anecdotal information suggest that the stock is severely depleted.

Outlook for 2013

No reliable assessment can be presented for this stock. This is because of lack of data.

Other considerations

MSY approach

Given the international conservation status of this species, MSY is not considered to be a suitable target.

STECF COMMENTS: STECF agrees with the ICES advice.

8.12 Tope (*Galleorhinus galeus*) in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: There are no currently no targeted commercial fisheries for tope in the North East Atlantic, though they are taken as a by-catch in trawl, gillnet and longline fisheries, including demersal and pelagic set gears. Though tope are discarded in some fisheries, due to their low market value, other fisheries land this species as by-catch. Tope is also an important target species in recreational sea angling and charter boat fishing in several areas, with most anglers and angling clubs following catch and release protocols. Landings data are limited, as landings data are often included as "dogfishes and hounds" (DGH). Nevertheless, England and France have some species-specific landings data, and there are also limited data from Denmark, Ireland, Portugal and Spain in recent years. Many of the reported landings are from the English Channel, Celtic Sea and northern Bay of Biscay. Tope is also caught in Spanish fisheries in the western Cantabrian Sea (Galicia), where about 80% of the landings are from longline vessels, with the remainder from trawl and small gillnets. Tope is also reported in the

catches off mainland Portugal, and are an important component of Azorean bottom long line fisheries. Tope are also caught in offshore long-line fisheries in this area. There were no major changes in the fishery noted since 2006. It has been suggested that there may be a greater retention of tope in some UK inshore fisheries operating in ICES Division IVc, as a result of by-catch limits on skates and rays, although no data are currently available to verify it.

Landings were increased since 1992 until 2002 (from 427t to 798t), then dropped to 371t in 2005. Since then reported landings fluctuated between 300t and 500 t. Reported landings in 2011 are estimated at 301t. The degree of possible mis-reporting or under-reporting is not known. Landings indicate that France is one of the main nations landing tope. The United Kingdom also land tope, though species-specific data are not available prior to 1989. Since 2001, Ireland, Portugal and Spain have also declared species-specific landings, though recent data were not available for Spanish fisheries. Though some discards information is available from various nations, data are limited for most nations and fisheries. The available data (England and Wales) indicated that juvenile tope tend to be discarded in demersal trawl fisheries, though larger individuals are usually retained, with tope caught in drift and fixed net fisheries usually retained.

SOURCE OF MANAGEMENT ADVICE: The main recent source of information is ICES. However no species specific management advice is given.

REFERENCE POINTS: No precautionary reference points have been agreed for tope in the Northeast Atlantic.

STOCK STATUS:

F (Fishing Mortality)		
	2010–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2010–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	?	Decreasing

The state of the stock is unknown. Landings of tope have been relatively stable during the last two decades, albeit lower than in the late 1970s and early 1980s. Tope is not encountered in surveys in sufficient numbers to determine trends. No assessment was undertaken, due to insufficient data. WGEF considers that there is a single stock of tope in the ICES area, with the centre of the distribution ranging from Scotland and southern Norway southwards to the coast of north-western Africa and Mediterranean Sea. Hence, the North East Atlantic tope stock covers the ICES Area (II–X),

Mediterranean Sea (Subareas I–III) and northern part of the CECAF area, and any future assessment of the Northeast Atlantic tope stock may need to be undertaken in conjunction with the General Fisheries Commission for the Mediterranean (GFCM) and Fishery Committee for the Eastern Central Atlantic (CECAF). The stock unit identified by WGEF was based on published tagging studies which clearly indicate that tagged fish move widely throughout the North East Atlantic. Tope is listed in the UK Biodiversity priority list and is classified as Vulnerable in the IUCN Red data List.

RECENT MANAGEMENT ADVICE: Based on ICES approach to data-limited stocks, ICES advises that catches should be reduced by 20%. Because the data for catches of tope are not fully documented and considered unreliable (due to the historical use of generic landings categories), ICES is not in a position to quantify the result. Measures to identify pupping areas should be taken.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current level of exploitation is appropriate for the stock.

For this stock, ICES advises that catches should decrease by 20% in relation to the average of the last three years. However, as species-specific landings data are not complete, it is not possible to quantify the current catch.

Additional measures should be identified that can regulate exploitation of this stock. Such measures may include seasonal and/or area closures, technical measures, and tailored measures for any target fisheries. Such measures should be developed by stakeholder consultations, considering the overall mixed fisheries context.

Additional considerations

There is limited information on the distribution of tope pups, though they have been reported to occur in certain inshore areas (e.g. southern North Sea and the Bristol Channel). The current lack of more precise data on the location of pupping and nursery grounds, and their importance to the stock, precludes spatial management of the fisheries at the moment. Nevertheless, protecting pupping and nursery habitats has been considered an important tool for the Australian stock, where seasonal closures and gear restrictions have been used to protect pregnant females when they migrate to pupping grounds.

Occasional records of pups are recorded in UK surveys are from the southern North Sea (IVc), though they have also been recorded in the northern Bristol Channel (VIIf). The lack of more precise data on the location of pupping and nursery grounds, and their importance to the stock, precludes spatial management for this species at the present time.

A genetic study (Chabot and Allen, 2009) on the eastern Pacific population including comparisons with samples from Australia, South and North America and UK, shows that there is little to no gene flow between these populations, meaning an apparent lack of migration.

STECF COMMENTS: STECF agrees with the ICES advice for 2013 and 2014.

8.13 Porbeagle *(Lamna nasus)* in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Porbeagle is a highly migratory and schooling species. Sporadic targeted fisheries developed on these schools. Porbeagle has been exploited commercially since the early 1800s,

principally by Scandinavian fishers; however, the "boom" period for this fishery in the Northeast Atlantic began in the 1930s. Porbeagle fisheries have been highly profitable. The main countries catching or having caught porbeagles are Spain and France. However in the past, important fisheries were prosecuted by Norway, Denmark and the Faeroe Islands.

By the beginning of the 1960s, the Norwegian fishery extended briefly to the Orkney–Shetland area and the Faroes before moving to the Northwest Atlantic waters. The Danish fishery operated in the North Sea where the catches decreased in the middle of the 1960s. However, a seasonal and profitable French longline fishery began in the 1970s in the Celtic Sea and Bay of Biscay. It lasted until the TAC was reduced to zero. Prior to the closure of the fishery, the French fleet was composed of about five boats based at Yeu Island (Atlantic coast of France).

There is a by-catch by demersal trawlers and gillnets from many countries, including Ireland, UK, Danemark, France and Spain in the North Sea, west of Ireland and Biscay.

An unquantified amount of discarding now takes place in mixed demersal trawl and gillnet fisheries operating in EC waters. Discard mortality is unknown.

SOURCE OF MANAGEMENT ADVICE: The main recent source of information and advice on porbeagle in the Northeast Atlantic is ICES. There is no fishery-independent information on this stock. Landings data for porbeagle may be reported as porbeagle, or as 'various sharks nei' in the official statistics. This means that the reported landings of porbeagle are likely to be an underestimation of the total landing of the species from the NE Atlantic. ICCAT is responsible for the management of this species in the tuna fisheries.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	Not defined	
	F_{MSY}	Not defined	
Precautionary Approach	B_{lim}	Not defined	
	B_{pa}	Not defined	
	F_{lim}	Not defined	
	F_{pa}	Not defined	

(unchanged since: 2010)

STOCK STATUS:

F (Fishing Mortality)		
	2008–2011	
MSY (F_{MSY})	?	Unknown

Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2008–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Depleted

The fisheries in the Northern part of the stock area have ceased and have not resumed. Before quotas were put in place, if porbeagle were present in sufficient numbers to support a fishery, a fishery would have developed. The fact that no fishery developed can be considered as a sign that the stock had not recovered from its previous low numbers. However, in the absence of any quantitative data to demonstrate stock recovery, and in regard of this species' low reproductive capacity, the stock is probably still depleted.

Porbeagle is subject to the UN agreement on highly Migratory Stocks and the UK Biodiversity priority list. In IUCN, porbeagle is classified as Vulnerable for the depleted unmanaged population in the northeast Atlantic, and Lower Risk (conservation dependent) for the northwest Atlantic, in recognition of the introduction of the US and Canadian Fisheries Management Plans (IUCN 2000).

RECENT MANAGEMENT ADVICE:

Given the state of the stock, no targeted fishing for porbeagle should be permitted and by-catch should be limited. Landings of porbeagle should not be allowed.

Porbeagles are particularly vulnerable to fishing mortality, because the population productivity is low (long-lived, slow growing, high age-at-maturity, low fecundity, and a protracted gestation period) and they have an aggregating behaviour. In the light of this, risk of depletion of reproductive potential is high. It is recommended that exploitation of this species should only be allowed when indicators and reference points for stock status and future harvest have been identified and a management strategy, including appropriate monitoring requirements has been decided upon and is implemented.

Outlook for 2012-2013

Exploratory assessments conducted in 2009 and 2010 were not considered a basis for advice.

Other considerations

Based on the catch trend, the stock is estimated to be well below its historical high levels of the 1930s–1950s. This is demonstrated by the observation that the Northern fisheries have ceased and have not been resumed.

No new information has been provided since 2009 regarding the catches except an analysis of the French cpue (1972–2008), which underlines the important local variations of porbeagle abundance and hence the difficulties in assessing the state of the stock without a long cpue time-series and for the whole distribution area of the stock.

The catch time-series has been improved since 2009, notably by the report of the estimated bycatch of the Spanish swordfish longline fishery. However, catch data are considered to be underestimated

because some countries have incomplete recordings of porbeagle (or they have been reported as generic sharks).

APEX Tagging program results was presented during the ICCAT 2012 : 1960 porbeagle tagged off the northest coast of USA since 1961, 360 recaptures were registered in 2011 with a maximum of 10 year at liberty (average 41% < year at liberty) suggesting few intrusion in the central Atlantic.

UK electronic tagging studies (14 sharks and 2062 days of data) were conducted recently around the British Isles. The furthest confirmed distance recorded by a porbeagle shark from the British Isles, was from a shark which moved to the west central Atlantic after being tagged in north-west Ireland during the summer.

A recent genetic study suggests that the stock is genetically robust, although further confirmation is required.

The history of the fishery is not well documented, and reports often emphasized or omitted some aspects (economic drivers, Danish participation, results of the 1958–62 Norway prospecting) that may alter the perception of the fishery dynamics.

MSY approach

There is no assessment available to alter the perception of the depleted nature of the stock. Therefore there is no non-zero catch option that is compatible with the ICES MSY framework.

PA approach

There is no new information to alter the perception of the depleted nature of the stock. In view of the low reproductive capacity of porbeagle, a zero fishing mortality appears the only option that can allow a recovery of the stock. There should be no fishery, and landings of porbeagle should not be allowed." A rebuilding plan should be developed for this stock, noting that the time for recovery will exceed a decadal time frame.

STECF COMMENTS: STECF agrees with the ICES advice.

STECF also agrees with ICES that it should be a requirement for all countries to document all incidental by-catches of this species and that regarding the large distribution of this species and its aggregative behaviour, some international collaborative survey could be a way fill the lack of information requested for an assessment.

STECF also notes that the data used by ICES and ICCAT are not identical and therefore may lead to slightly different perceptions of the stock status. STECF stresses that compiling the datasets for the various fisheries separately is essential to provide the best possible assessment of the state of the stock.

Porbeagle has been recently listed to the CITES Appendix III (2012/044) by Belgium, Cyprus, Denmark11, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Malta, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and United Kingdom of Great Britain and Northern Ireland. Appendix III is a list of wildlife and plant species identified by particular CITES Party countries as being in need of international trade controls.

8.14 Thresher *sharks (Alopius vulpinus and Alopius superciliosus)* in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

Two species of thresher shark occur in the ICES areas: common thresher (*Alopias vulpinus)* and bigeye thresher (*A. superciliosus).* Of these, *A. vulpinus* is the dominant species taken in the continental shelf fisheries of the ICES area. There is little information on the stock identity of these circumglobal sharks, and WGEF assumes that there is a single NE Atlantic and Mediterranean stock of

A. vulpinus. This stock probably ex-tends into the CECAF area. The presence of a nursery ground in the Alboran Sea provides the rationale for including the Mediterranean Sea within the stock area.

There are no target fisheries for thresher sharks in the NE Atlantic; although they are taken as a bycatch in longline and driftnet fisheries. Both species are caught mainly in longline fisheries for tunas and swordfish, although they may also be taken in drift-net and gillnet fisheries. The fisheries data for the ICES area are scarce, and they are unreliable, because it is likely that the two species (*Alopias vulpinus* and *A. superciliosus*) are mixed in the records.

ICCAT is responsible for the management of this species in the tuna fisheries.

Article 19 of EC Regulation No. 44/2012 prohibits the retention, transshipment or landing any part or whole carcass of bigeye thresher shark *Alopias superciliosus* in any fishery, and also prohibits any directed fishery for thresher sharks Alopias spp. in the ICCAT area.

Additional considerations

Some Van Bertalanffy growth parameters for the bigeye thresher shark of the tropical northeastern Altantic estimated on 117 specimens ranging from 176 o 407 cm TL as well as maturity information on the bigeye thresher shark from the Atlantic were provided by Fernandez-Carvalho et al. (2011 and 2012). Significant differences were found in the size distribution of the species and the sex ratios between the North and South Atlantic. Sizes at first maturity (L50) were estimated at 206.09 cm FL for females and 159.74 cm FL for males.

Ecological risk assessments were undertaken by ICCAT for 11 pelagic sharks (ICCAT, 2011). These analyses demonstrated that the bigeye thresher has the lowest productivity and highest vulnerability with a productivity rate of 0.010, and that the common thresher is 10^{th} in rank with a productivity rate of 0.141

One *A. supersillosus* were electronically tagged in Gulf of Mexico in 2008 by Carlson & Gulak. After 120 days at sea the bigeye thresher shark moved from 51 km, spending most of his time between 25 and 50 m depth in waters between 20 and 22 °C. Compare to previous studies by Weng & Block (2004) this individual exhibit very light diurnal movement pattern that may be caused by the deep of the tagging location.

STECF COMMENTS: STECF suggest that in view of the wide distribution of the species and the lack of information on stocks identity, catches by all nations should be reported to the relvant RFMO in an attempt to improve the fishery-dependent data on thresher sharks.

8.15 Blue shark (*Prionace glauca*) in the North East Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

The DELASS project and the ICCAT Shark Assessment Working Group consider there to be one stock of blue shark *Prionace glauca* in the North Atlantic. Thus the ICES area is only part of the stock. ICCAT, 2008 considered that the 5°N parallel was the most appropriate division between North and South Atlantic stocks of blue shark.

In recent years, more information has become available about fisheries taking blue shark in the North Atlantic. Although the available data are limited, it offers some information on the situation in fisheries and trends. Although there are no large-scale directed fisheries for this species, it is a major bycatch in many fisheries for tunas and billfish, where it can comprise up to 70% of the total catches and thereby exceed the actual catch of targeted species.

ACOM has never provided advice for blue shark in the ICES area. ICCAT is the responsible agency for assessment of this species. No specific management advice has been provided by ICCAT for this stock, to date.

Regarding the stock assessment of blue shark of the North and South Atlantic carried out in 2008, ICCAT estimated that the biomass is above MSY. As in the 2004 stock assessment, many runs of the model (using surplus production models, age-structured models and models without catches), the state of the stock seems to be close to the levels of unexploited biomass and the fishing mortality rates seem to be considerably below the level to attain MSY. Although the results of all the models used are conditional on the assumptions considered (for example, historical estimates of the catches and effort, the relationship between catch rates and abundance, the initial status of the stock in the 1950s and the various life cycle parameters), the majority of the models predicted, from a coherent mode, that the blue shark stocks are not over-exploited and that over-fishing is not occurring.

There are no measures regulating the catches of blue shark in the North Atlantic. EC Regulation No. 1185/2003 prohibits the removal of shark fins of this species, and subsequent discarding of the body. This regulation is binding on EC vessels in all waters and non-EC vessels in Community waters.

ICCAT is responsible for the management of this species in the tuna fisheries.

STECF COMMENTS: STECF has no comments.

8.16 Portuguese *dogfish* (*Centroscymnus coelolepis*) in the north-east Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Portuguese dogfish are caught in virtually all deep-water fisheries in the NE Atlantic although catch data is patchy and incomplete. French trawlers, UK and German longliners and gillnetters in VI and VII are the fleets targeting this species. These fisheries began in 1991 and before that the species was not exploited. There are also directed longline fisheries in VIII and IX and some by-catches from XII. Landings of this species have been routinely grouped together with Leafscale gulper shark and reported as siki. Unless suitable data can be found to enable splitting of the catch data, historical catch levels will remain uncertain. Combined siki landings began in 1988 (although an unknown quantity is likely to have been discarded prior to this) and increased rapidly to over 8000 tonnes in 1997. Since 1997 landings have fluctuated with an overall upward trend, reaching a maximum of over 10,000 tonnes in 2003. Since 2003, reported landings have declined due to stock depletion and the introduction and gradual reduction in EU TACs and quotas is response to ICES advice, which in recent years has been for a zero TAC. Portuguese dogfish is an unavoidable bycatch taken in several mixed trawl fisheries and mixed longline fisheries. It is also taken as a bycatch in other fisheries, for example the anglerfish gillnet fishery. Fishing effort has declined since restrictions on deep-water fishing were put in place in 2007 (STECF, 2011). Fishery-independent data are derived from surveys that take place in a restricted part of the whole distribution area considered for each of the two stocks.

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. No analytical assessment was carried out in 2012. The assessment is based on commercial CPUE trends. Landings data on these species remain very problematical and, in many cases, reliable data are only available for combined siki sharks. Many countries continue to report landings in amalgamated categories such as various sharks N.E.I. Retrospective splitting of the data into species categories and reconstruction of historic data from mixed categories is based on limited information and is problematic.

REFERENCE POINTS:

Reference points

No reference points have been defined for this stock.

Trends in relative abundance estimates show that Portuguese dogfish abundance has declined to levels below any candidate reference point. Landings have declined in response to reduced abundance and restrictive management measures (e.g. TAC = 0 from 2010 onwards).

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below any candidate reference point

There is insufficient information to separate the landings of Portuguese dogfish *Centroscymnus coelolepis* and leafscale gulper shark *Centrophorus squamosus*. Total international landings of the combined species have steadily increased to around 11 000 t in 2003 and have rapidly declined after 2003 to the lowest levels since the fishery started. Substantial declines in cpue series for the two species in Subareas V, VI, and VII suggest that both species are severely depleted and that they have been exploited at unsustainable levels. In Division IXa, lpue series are stable for leafscale gulper shark and declining for Portuguese dogfish.

There is no information to alter the perception of this stock as being depleted since the 2006 catch per unit effort estimates (ICES, 2006). Due to its very low productivity, Portuguese dogfish can only sustain very low rates of exploitation.

RECENT MANAGEMENT ADVICE: ICES advice for 2013 and 2014, on the basis of the precautionary approach, was that there should be no catches of Portuguese dogfish.

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	TAC = 0
Cautiously avoid impaired recruitment (**Precautionary Approach**)	TAC = 0
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

Due to its very low productivity, Portuguese dogfish can only sustain very low rates of exploitation. The rates of exploitation and stock sizes of deepwater sharks cannot be quantified. Given their very poor state, ICES recommends a zero catch of Portuguese dogfish.

This is the first time ICES has given separate advice for this species. Until now, advice has been given for this species and leafscale gulper shark combined. No new assessment was performed in 2012. However, there is no information to alter the perception of the stock as being depleted. The advice is the same as was provided for 2011 and 2012.

Other considerations

Outlook for 2013-2014

No analytical assessment can be presented for this stock. Therefore, fishing possibilities cannot be projected.

Management considerations

TACs only regulate the landings, and a low TAC on a low-value bycatch species could induce more discards. Because this species is caught as a bycatch in demersal fisheries, it would benefit from a reduction in the overall demersal fishing effort.

MSY transition scheme

An estimate of fishing mortality is not available. Portuguese dogfish are long-lived stocks, and no population estimates are available. Therefore a transition to F_{MSY} by 2015 is not currently possible.

STECF COMMENTS: STECF agrees with the ICES advice for Portuguese dogfish.

STECF notes that for 2013 a TAC of 0 t has already been agreed for deepwater sharks.

STECF recommends that EU fisheries exploiting deepwater sharks should not proceed until sustainable exploitation rates for deepwater sharks have been determined.

STECF further advises that in order to maximise protection of deep-water sharks, the gill netting ban introduced in 2006 (EC council regulation 51/2006Annex III) in waters deeper than 600m should be maintained. STECF supports the proposal to extend the gill net ban to other areas (Council regulation (EC) 40/2008, Annex III)

8.17 Kitefin shark (*Dalatias licha*) in the north-east Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES Kitefin is mainly distributed in the Azorean Islands, but occurs widely at low abundance throughout the ICES area. The population structure is not well understood. Currently there are no targeted commercial fisheries for kitefin shark in the Northeastern Atlantic, though they are taken as a bycatch in trawl and hook-and-line fisheries. The target Azorean fishery stopped in 1998. After that occasional high bycatch values were reported by Portugal from Subarea VI in 2000, 2001, and 2003. Large interannual fluctuations in landings and the decrease in landings after 1991 are believed to have been driven by fluctuations in market prices

SOURCE OF MANAGEMENT ADVICE: The main recent source of information and advice on kitefin shark in the Northeast Atlantic is ICES. An update assessment was carried out in 2012.

REFERENCE POINTS

No reference points have been defined for this assessment unit. No new information is available to alter the perception of a stock that is depleted below any candidate biomass reference point.

STOCK STATUS:

F (Fishing Mortality)

	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below any candidate reference points.

RECENT MANAGEMENT ADVICE:

The advice, and its basis, is the same as was provided for 2011 and 2012. ICES advise for 2013-2014 on the basis of the precautionary approach that no targeted fisheries should be permitted unless there are reliable estimates of current exploitation rates and sufficient data to assess productivity. There should be no fisheries unless there is evidence that this will be sustainable.

The advice is precautionary. The methods applied to derive quantitative advice for data-limited stocks are expected to evolve as they are further developed and validated.

TACs only regulate the landings, and a low TAC on a low-value bycatch species could induce more discards.

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	TAC = 0
Cautiously avoid impaired recruitment (**Precautionary Approach**)	TAC = 0
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

Other considerations

Stock assessments of kitefin shark from Subarea X were made during the 1980s, using an equilibrium Fox production model (Silva, 1987). The stock was considered intensively exploited with the average observed total catches (809 t) near the estimated maximum sustainable yield (MSY = 933 t). An optimum fishing effort of 281 days bottom net fishing and 359 man trips fishing with handlines were suggested, corresponding approximately to the observed effort. During the DELASS project (Heessen, 2003) a Bayesian stock assessment approach using three cases of the Pella–Tomlinson biomass dynamic model with two fisheries (handline and bottom gillnets) was performed (ICES, 2003, 2006). The stock was considered depleted based on the probability of the biomass 2001 being less than B_{MSY}. These assessment results must be interpreted with caution because the cpue used by the assessment may not reflect abundance trends. No assessments have been performed since because of the lack of information.

There are no current target fisheries and no fishery-independent surveys to monitor the stock. ICES considers that the development of a fishery should not be permitted unless data at the level of sustainable catches are made available.

It could be useful to evaluate the status of the kitefin shark stock in the closed areas around the Azores.

MSY transition scheme

An estimate of fishing mortality is not available. Demersal elasmobranchs are long-lived stocks, and no population estimates are available. Therefore a transition to F_{MSY} by 2015 is not currently possible.

STECF COMMENTS: STECF agrees with the ICES advice for kitefin shark.

STECF notes that for 2013 a TAC of 0 t has already been agreed for deepwater sharks.

STECF also considers that EU fisheries exploiting deepwater sharks should not proceed until sustainable exploitation rates for deepwater sharks have been determined.

STECF further advises that in order to maximise protection of deep-water sharks, the gill netting ban introduced in 2006 (EC council regulation 51/2006Annex III) in waters deeper than 600m should be maintained. STECF supports the proposal to extend the gill net ban to other areas (Council regulation (EC) 40/2008, Annex III).

8.18 Leaf-scale gulper *shark* (*Centrophorus squamosus*) in the north-east Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Leaf-scale gulper shark are caught in virtually all deep-water fisheries in the NE Atlantic. Catch data is patchy and incomplete. French trawlers in VI and VII target this species. Gill-net vessels registered in the UK (England and Wales), UK (Scotland) and Germany, target this and other deepwater species since the mid-1990s and takes place mainly west of the British Isles (Sub-areas VI and VII). There are also directed longline fisheries in VIII and IX and some by-catches from XII. Landings of this species have been routinely grouped together with Portuguese dogfish and reported as siki. Combined siki landings began in 1988 (although an unknown quantity is likely to have been discarded prior to this) and increased rapidly to over 8000 tonnes in 1997. Since 1997 landings have fluctuated with an overall upward trend, reaching a maximum of over 10 000 tonnes in 2003. Since 2003, reported landings have declined due to stock depletion and the introduction and gradual reduction in EU TACs and quotas is response to ICES advice, which in recent years has been for a zero TAC. Leafscale gulper shark is both taken as unavoidable bycatch in several mixed trawl fisheries and mixed longline fisheries. They are taken as a bycatch in other fisheries, for example the anglerfish gillnet fishery. Fishing effort has declined since restrictions on deep-water fishing were put in place in 2007 (STECF, 2011).

SOURCE OF MANAGEMENT ADVICE: The main advisory body is ICES. No analytical assessment was carried out in 2012. The assessment is based on commercial CPUE trends. Landings data on these species remain very problematical and, in many cases, reliable data are only available for combined siki sharks. Retrospective splitting of the data into species categories and reconstruction of historic data from mixed categories is based on limited information and is problematic. Unless suitable data can be found to enable splitting of catch data, historical catch levels will remain uncertain.

REFERENCE POINTS: No reference points have been defined for this stock. Trends in relative abundance estimates show that leafscale gulper shark abundance has declined to levels below any candidate reference point.

STOCK STATUS:

F (Fishing Mortality)

	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below any candidate reference points.

There is insufficient information to separate the landings of Portuguese dogfish *Centroscymnus coelolepis* and Leafscale gulper shark *Centrophorus squamosus*. Total international landings of the combined species have steadily increased to around 11 000 t in 2003 and have rapidly declined after 2003 to the lowest levels since the fishery started. Substantial declines in cpue series for the two species in Subareas V, VI, and VII suggest that both species are severely depleted and that they have been exploited at unsustainable levels. In Division IXa, lpue series are stable for Leafscale gulper shark and declining for Portuguese dogfish.

RECENT MANAGEMENT ADVICE: This is the first time ICES has given separate advice for this species. Until now, advice was given for this species and Portuguese dogfish combined. No new assessment was performed in 2012. However, there is no information to alter the perception of the stock as being depleted. The advice is the same as was provided for 2011 and 2012. ICES advises on the basis of the precautionary approach that there should be no catches of leafscale gulper shark for 2013 and 2014. Due to its very low productivity, leafscale gulper shark can only sustain very low rates of exploitation. The rates of exploitation cannot be quantified. However, based on the cpue information, Portuguese dogfish and Leafscale gulper shark are considered to be depleted. Given their very poor state, ICES recommends a zero catch of Portuguese dogfish and Leafscale gulper shark.

Management Objective (s)	**Landings in 2011 and 2012**
Transition to an **MSY approach** with caution at low stock size	TAC = 0
Cautiously avoid impaired recruitment (**Precautionary Approach**)	TAC = 0
Cautiously avoid impaired recruitment and achieve other objective(s) of a **management plan** (e.g., catch stability)	n/a

TACs only regulate the landings, and a low TAC on a low-value bycatch species could induce more discards. Because the elasmobranch species are caught as a bycatch in demersal fisheries, they would benefit from a reduction in the overall demersal fishing effort.

Other considerations

Outlook for 2013-2014

No analytical assessment can be presented for this stock. Therefore, fishing possibilities cannot be projected.

MSY transition scheme

An estimate of fishing mortality is not available. Leafscale gulper sharks are long-lived stocks, and no population estimates are available. Therefore a transition to F_{MSY} by 2015 is not currently possible.

STECF COMMENTS: STECF agrees with the ICES advice for Leafscale gulper shark.

STECF notes that for 2012 a TAC of 0 t has already been agreed for deepwater sharks.

STECF also considers that EU fisheries exploiting deepwater sharks should not proceed until sustainable exploitation rates for deepwater sharks have been determined.

STECF further advises that in order to maximise protection of deep-water sharks, the gill netting ban introduced in 2006 (EC council regulation 51/2006Annex III) in waters deeper than 600m should be maintained. STECF supports the proposal to extend the gill net ban to other areas (Council regulation (EC) 40/2008, Annex III).

8.19 Angel shark (*Squatina squatina*) in the north-east Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Angel shark was rarely reported in landings data prior to it being listed as a prohibited species. It is believed that the peak in UK landings in 1997 from Divisions VIIj–k were either misreported anglerfish (also called monkfish) or hake, as angel shark is more of a coastal species. These figures have been removed from the landings data. French landings have declined from >20 t per year in the 1970s to less than 1 t per year prior to the prohibition on landings. Angel shark landings in Subarea VIII have always been very low.

SOURCE OF MANAGEMENT ADVICE: Advice on angel shark is provided by ICES**.**

REFERENCE POINTS: No reference points have been proposed for this species.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Depleted

There are few recent records of captures of angel shark and it may be extirpated from areas of former habitat. Small local populations do exist, particularly in the Celtic seas ecoregion (Cardigan Bay, Division VIIa, and Tralee Bay, Division VIIj), although numbers here may also be in decline. It is considered to be extirpated in the North Sea, although it may still occur in Division VIId.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary approach that there should be no catches of angel shark, and that it should remain a species prohibited from being fished. Measures should be taken to minimize bycatch.

MANAGEMENT PLANS: Angel shark is currently on the EU prohibited species list.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2013 and 2014.

8.20 Smoothhounds (*Mustellus* spp) in the north-east Atlantic

The stock status and advice for this stock for 2015 will be released in the Autumn of 2014. The text below therefore remains unchanged from the Consolidated STECF review of advice for 2014 (STECF 13-27).

FISHERIES: Smooth-hounds are taken as a bycatch in mixed demersal and gillnet fisheries. Smooth-hounds are important species for recreational fisheries in some areas. Although landings data are preliminary and underestimate true landings, it is clear that catches have increased in recent years. This increase may reflect the increased abundance and/or improved marketing opportunities for the species (given the zero TAC for spurdog).

SOURCE OF MANAGEMENT ADVICE: Advice on smoothounds is provided by ICES**.**

REFERENCE POINTS: No reference points have been proposed for this species.

STOCK STATUS:

F (Fishing Mortality)		
	2005–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2005–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

The relative abundance of smooth-hounds in trawl surveys in Subareas IV, VII, and VIII have increased in recent years. The average of the stock size indicator (number hr−1) in the last two years (2010–2011) is 42% higher than the average of the five previous years (2005–2009) in the Celtic Sea,

and 45% higher for the southern North Sea and eastern English Channel. There has been a general increase in smooth-hound abundance since the early 1990s.

Commercial landings have increased in recent years, although landings data are considered unreliable, due to the widespread use of generic landings categories (e.g. dogfish and hounds). The quality of landings data is improving for the genus. Species-specific data are considered unreliable and ICES can currently only provide advice at the genus level.

RECENT MANAGEMENT ADVICE: Based on ICES approach to data-limited stocks, ICES advises that catches should be reduced by 4%. Because the data for catches of smooth-hounds are not fully documented and considered highly unreliable (due to the historical use of generic landings categories), ICES is not in a position to quantify the result.

MANAGEMENT PLANS: There is a generic EC Action Plan for the Conservation and Management of Sharks, but no specific management objectives are known to ICES.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2013 and 2014.

9 DEEPWATER RESOURCES

General comments and description of the fisheries for deepwater resources

The term 'deep-water' is defined by ICES to include waters of depths greater than 400 m. Deep water in the ICES area covers the deep parts of ICES Sub-areas I, II, III, V-X, XII, and XIV. However, some of the species included as deep-water species in the management advice by ICES are also distributed in more shallow waters, e.g. ling and tusk. Other species/stocks, which have similar depth distributions, e.g. anglerfish and Greenland halibut, are already assessed by ICES in area-specific assessment working groups.

Deep-water covers a huge area from the Arctic north to the sub-tropical south. It also covers ridges and underwater seamounts often with a quite unique biology. Productivity is very low in the deep-water. The diversity of deep-water life history strategies is considerable, but some species of fish targeted by fisheries are particularly vulnerable to disturbance because they grow slowly, mature late in life, and form aggregations easily accessible to fisheries. Recovery rates are much slower than in shallower waters. The knowledge of central biological characteristics such as stock identity, migration, recruitment, growth, feeding, maturation, and fecundity of most deep-water species still lags considerably behind that of commercially exploited shelf-based species. Such information is required to expand our understanding of the population dynamics of deep-water fishes, which in turn is required to underpin stock assessments.

Fisheries data including length and age compositions, discards, and cpue, are slowly increasing for deep-water stocks but time-series data are often short and are not available in sufficient spatial resolution for some stocks e.g. orange roughy and alfonsinos. VMS data are not readily available for most fleets.

In many cases, information on stock structure of deep-water species is lacking. However, in general assessment data are improving for several stocks/species. For instance this year (2012), ICES provides advice on tusk (*Brosme brosme*) in Va (Icelandic waters) and XIV based on an analytical assessment of the stock in Va. Also assessment data for Silver smelt and Roundnose Grenadier stocks seem to have improved. but for the majority of deep water species there is still no conclusive information on stock structure. In those cases "management units" have been used that have previously been suggested on the basis of distribution, life history and biological parameters, and bathymetrical considerations.

Fisheries on deep-water species have developed rapidly and the resources they exploit are generally especially vulnerable to over-fishing. Within the ICES area species/stocks have been depleted before appropriate management measures have been implemented e.g. orange roughy. It is also of concern that the landings statistics available may not reflect the true scale of the recent fishing activity, especially in waters outside national EEZs.

9.1 Alfonsinos/Golden eye perch (*Beryx spp.)*

FISHERIES: The section deals with two species, *Beryx splendens* and *Beryx decadactylus.*

Most (50%) of the landings of *Beryx* spp. are from hand-lines and long-lines within the Azorean EEZ of Sub-area X and by trawl outside the EEZ on the Mid-Atlantic Ridge. The trawl fishery landings refer to both species combined. The general absence of data on species composition of the catches and biological parameters are important limiting factors for the knowledge of these fish stocks. Underreporting of catches from international waters is suspected.

Alfonsinos aggregate in shoals, often associated with seamounts, and fisheries have, historically, had high catch rates once the shoals are located. As a consequence of this spatial distribution, their life-history and aggregation behaviour, these species can only sustain low rates of exploitation; localized sub-units of the population can be quickly depleted, even within a single season. To prevent depleting localised aggregations that have not yet been mapped and assessed, ICES has advised that the exploitation of new seamounts should not be allowed.

The total in catches in 2013 is 254t, all of which is landings.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: For both species the stock structure is uncertain. They are distributed over a wide area, and may be composed of several populations.

REFERENCE POINTS: No precautionary reference points have been proposed for the stock(s) of Alfonsino/golden eye perch in the North East Atlantic, due to the lack of appropriate data.

STOCK STATUS:

Fishing pressure		
	2011–2013	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

Stock size		
	2011–2013	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

Two species are landed in this stock (*Beryx splendens* and *Beryx decadactylus*). Total catches (species combined) declined in the late 1990s and have since stabilized at about 400 tonnes (for the two species combined). Species-specific catch trends in the Azores fishery showed similar trends for both species. As these are aggregative species overall catches depend on the commercial targeting and aggregated catches may not reflect stock abundance.

RECENT MANAGEMENT ADVICE:

Based on ICES approach to data-limited stocks, ICES advises that annual catches should be no more than 280 tonnes. All catches are assumed to be landed.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented, unless there is ancillary information clearly indicating that the current exploitation is appropriate for the stock.

In 2012 ICES advised a 20% reduction in catches, equivalent to a TAC of 280 tonnes. New data do not change the perception of the stock; therefore, ICES maintains the same advice for 2015 and 2016, i.e. catches should be no more than 280 tonnes.

STECF COMMENTS:STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016 that annual catches should be no more than 280t. All catches are assumed to be landed.

9.2 Ling (*Molva molva*)

FISHERIES: Ling is primarily fished in the depth range 200-500 m, though it is also found in shallower depths. This species does not have such extreme low productivity and high longevity as typical deep-water species, though specific data for many areas are lacking. The major fisheries are the longline and gillnet fisheries, but there are also by-catches in other gears, i.e. trawls and handline. Total reported landings from all areas in 2011, 2012 and preliminary estimates for 2013 are 37.4 kt, 42.9 kt and 43.4 kt respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: There is insufficient scientific information to establish the extent of putative stocks; however, ling may be sufficiently isolated at separate fishing grounds to be considered as individual management units. On this basis ICES advice is presented for the following management units:

- Divisions I and II (Arctic)
- Va (Iceland)
- Vb (Faroes)
- IIIa, IVa, VI, VII, VIII, IX, XII, and XIV (other areas).

9.2.1 Ling (*Molva molva*) in Divisions I and II (Arctic)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: Legislation enacted in 2000 to regulate the cod fishery has resulted in a continuous reduction in the number of longliners in the fishery for tusk, ling, and blue ling. By 2011 only 37 vessels in the fishery were larger than 21 m. However, it is not clear that there has been a reduction in effort targeting ling.Total reported landings from for 2013 8.8 kt.

REFERENCE POINTS: No reference points have been set for this assessment unit.

STOCK STATUS:

F (Fishing Mortality)

	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation	→	Stable, but unknown in relation to poss. Ref. points

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented. The only information on the abundance of ling is from an index which may not be accurate (i.e. the index is unknot standardized and does not account for changes in fishing patterns), implying that cannot be considered to show precise changes in abundance over time. Discard data are not available. From the index trend it is inferred that increased catches since 2006 have not had a detrimental effect on the stock.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for 2015 is the same as the advice for 2013: Based on the ICES approach for data-limited stocks, ICES advises that there should be a 20% reduction in effort. ICES advises that effort in 2015 should be maintained at the same level implied by the 20% reduction advised for 2013. This leads to catches of no more than 8825 tonnes in 2015.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

The assessment of the stock is based on trends of an abundance index from commercial catches. There are no forecasts available. However, there is an indication of stable or increasing abundance in the fishable biomass from the commercial cpue index. If this is correct then the same effort may yield similar catches in 2013 and 2014 as in the period 2008–2011.

Additionally, considering that exploitation is unknown, ICES advises that effort should decrease by a further 20% as a precautionary buffer.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. However no effort data have been provided to quantify the effort reduction for the fishing fleets exploiting ling in Divisions I and II.

9.2.2 Ling (*Molva molva*) in Va (Iceland)

FISHERIES: Ling is primarily fished in the depth range 200–500 m, though it is also found at shallower depths. Ling in Division Va matures on average at a length of 75 cm, so a considerable proportion of catches consists of immature ling. Approximately 67% of the annual landings in Division Va are caught in a mixed fishery by longliners and the remainder as a bycatch, mainly by trawlers that primarily target cod. Discards are estimated to be less than 1% for the longline fishery.

Total catches (2013) were 11 657 t (67% longline, 30% trawl, and 3% gillnet and Danish seine). Discards are considered negligible.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	9 500 t	Based on B_{pa}.
	F_{MSY}	0.24	Based on stochastic simulations.
Precautionary approach	B_{lim}	Not defined.	
	B_{pa}	9 500 t	Based on the 97.5 percentile of the lowest SSB.
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in 2014)

STOCK STATUS:

Fishing pressure				
	2011	**2012**	**2013**	
MSY (F_{MSY})	✗	✗	✗	Just above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

Stock size				
	2012	**2013**	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	✓	✓	✓	Above

Recruitment was high from 2004 to 2010 and has decreased to very low levels since then. The spawning-stock biomass is currently at its highest level. Fishing mortality has decreased since 2008 and is now the lowest in the time-series. Catches have increased substantially in the last decade.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 14 362 tonnes. All catches are assumed to be landed.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be maintained at 0.24. This implies catches of no more than 14 362 t in 2015 and a stable spawning-stock biomass in the short term.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 that catches should not exceed 14,362 t.

9.2.3 Ling (*Molva molva*) in Vb (Faroes)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: The major fishery are the Faroese and Norwegian longline fisheries, but there are also bycatches by other gears, including trawls, gillnet, and handline. In recent years Faroese landings have accounted for about 60 to 70% of the total landings, of these around 60% are taken by longline, partly in directed ling fisheries, and 40% as bycatch by trawlers in fisheries for other groundfish. The Norwegian longliners catches have been declining for the last 3 years and take about 30-40% of the total ling landings. Other nations catch ling as a bycatch in trawl fisheries, contributing about 1 to 2% of total landings. Faroese fleet caught nearly all landings in 2011 because of no bilateral and multilateral agreements between the Faroes and Norway/EU. Total reported landings from Vb in 2011, 2012 and preliminary estimates for 2013 were 4843 t, 6011 t and 4086 t respectively.

REFERENCE POINTS: No reference points have been proposed for this stock. However, as adult abundance as measured by surveys is above the average of the time-series, expert judgement considered it likely that SSB is above any candidate values for MSY Btrigger.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	→	Stable

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable

Abundance indices suggest that ling in Division Vb is stable or increasing. Current catches are at about the long-term average (since the 1950s). There is some evidence of increased recruitment in recent years.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for 2015 is the same as the advice for 2013–2014: Based on the ICES approach for data-limited stocks, ICES advises that there should be a 20% reduction in effort. ICES advises that effort in 2015 should be maintained at the level implied by the 20% reduction advised for 2013.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

The assessment of the stock is based on trends in indices of abundance from surveys and commercial cpue. No forecasts are available. However, there are some indications of increased recruitment and an increase in adult biomass. If these are correct then the same effort may yield an increase in catches in 2013 and 2014.

Additionally, considering that exploitation is unknown, ICES advises that effort should decrease by a further 20% as a precautionary buffer.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

9.2.4 Ling (*Molva molva*) in IIIa, IVa, VI, VII, VIII, IX, XII, and XIV (Other areas)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-17).

FISHERIES: The major directed fishery for ling in Divisions IVa and Subarea VI is by Norwegian longline. The bulk of the landings from other countries are bycatches in trawl fisheries mainly directed at roundfish or deep-sea species. The landings from the central and southern North Sea (IVb,c) are bycatches in various other fisheries. In Subarea VII the main landings are generated by Norwegian and some Spanish longline fisheries. In Subareas VIII, IX, XII, and XIV all landings are bycatches in various fisheries. Total reported landings from these areas in 2011, 2012 and preliminary estimates for 2013 are 13.1 kt, 16.1 kt and 18.8 kt respectively.

REFERENCE POINTS: No reference points are defined for this assessment unit. Adult abundance as measured by the commercial index is above the average of the time-series. However, the status of the stock relative to historical levels is unknown and it may have been higher in the past. The level of the biomass relative to Btrigger is therefore unknown.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation		Stable

SSB (Spawning-Stock Biomass)		
	2007–2011	
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Stable

While no reliable assessment is available for this assessment unit and fishing possibilities cannot be projected, the historic cpue data suggest that the stock was stable at the current volume of catch.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock is biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for 2015 is the same as the advice for 2013–2014: *Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 10 800 tonnes.*

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

These cpue series cover the major fishing areas (Divisions VIa, IVa, and VIb) and are interpreted as being either stable or increasing, implying that abundance is at least stable at the current volume of catch.

Additionally, considering that exploitation is unknown, ICES advises that catches should decrease by a further 20% as a precautionary buffer. This results in catches of no more than 80% of the mean catch 2009–2011, i.e. 10 800 t in 2013.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015. The value of 10 800 t adviced by ICES for 2015 represents a reduction of 20 % on the average reported landings for 2009-2011.

9.3 Blue Ling (*Molva dypterygia*).

FISHERIES: The majority of landings are from the Norwegian coast (II), Iceland (Va), Faroes (Vb), west of Scotland and Rockall Trough (VI) and the Mid-Atlantic Ridge and Hatton Bank (XII). Landings from the west of Ireland and Western Approaches (VII) and further south are very small. A major part of this fishery is on spawning aggregations. Landings from Division IIa are mainly catches in a gillnet fishery off mid-Norway, elsewhere this species is taken mainly as by-catch in trawl fisheries.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

No analytical assessment is available for blue ling in Division Va and Subarea XIV (Iceland and Reykjanes ridge).

The Blue ling stock in Vb, VI and VII (Faroes Rockall and Celtic shelf) was benchmarked in 2014 and is the first year that an analytical assessment is presented. Two methods, a Stock Reduction Analysis (SRA) and a Multi-Year Catch Curve Model (MYCC) are used to assess the stock. The same models were used in 2012. The advice is based on MYCC; however, both models show similar stock dynamics.

No analytical assessment is available for blue ling in Divisions IIIa and IVa, and in Subareas I, II, VIII, IX, and XII

STOCK STRUCTURE: There is insufficient scientific information to establish the extent of putative stocks; however, blue ling may be sufficiently isolated at separate fishing grounds to be considered as individual management units. On this basis advice is presented for the following management units:

- Subdivisions Va and XIV (Iceland and Reykjanes ridge);
- Subdivisions Vb,VI, and VII (Faroes Rockall and Celtic shelf); and
- Subdivisions I, II, IIIa, IVa, VIII, IX, and XII.

The latter grouping is a combination of isolated fishing grounds and thus these areas are grouped due to lack of data. Landings from Subareas VIII, IX, and X are now ascribed to the related Spanish ling (*Molva macrophtalma*).

Blue ling is more vulnerable to over-exploitation than ling due to a slower growth rate and higher age at first maturity. It is particularly susceptible to rapid local depletion due to its highly aggregating behaviour during spawning. Ageing is a problem in this species, and thus age-structured analytical assessments are unlikely in the short-term.

9.3.1 Blue Ling (*Molva dypterygia*) in Va and XIV

FISHERIES: Blue ling, a gadoid species that grows faster than most deep-water species, is particularly vulnerable to exploitation (fisheries can target the spawning aggregations) and an opportunistic fishery on spawning aggregations account for pulses in landings in the early 1980s and in 1993. Closed areas to protect spawning aggregations in Division Va have been introduced since 2003. Blue ling have historically been taken as a bycatch in fisheries for cod, haddock, and saithe in Division Va. Since 2008 longliners have increased their targeting of blue ling in Division Va, and their landings now account for 70% of landings. The depth range of this fishery is 500 to 800 meters. Since the 2013/2014 fishing year the fishery has been regulated by TAC.

Total landings (2013) were 3.1 kt (56% longline, 42% trawl, and 2% other gear types).

REFERENCE POINTS: There is no analytical basis on which to calculate biological reference points. In the period 2002 to 2009, the mean value of F_{proxy} (total catch/survey biomass) was 1.75 and no detrimental effect was observed in the stock dynamics. This value can therefore be considered as an appropriate advisory F_{proxy} upon which to base catch advice. It is likely that the current biomass is above MSY $B_{trigger}$.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

Qualitative evaluation		Decreasing

Stock size		
		2011–2013
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Above potential reference points

Autumn survey indices show an increase in biomass since 2000. It is considered that the stock biomass is above possible reference points. There are indications that fishing mortality has been decreasing in the last two years. Juvenile abundance indices have been at their lowest value since 2010.

RECENT MANAGEMENT ADVICE:

Based on the ICES approach to data-limited stocks, ICES advises that catches should be no more than 3085 tonnes. All catches are assumed to be landed.

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks with reliable abundance information from fisheries-independent data and a target F_{proxy}, where abundance is considered above MSY $B_{trigger}$, ICES uses a harvest control rule that calculates catches based on the F_{proxy} target multiplied by the most recent survey biomass estimates.

For this stock an F_{proxy} of 1.75 is applied as a factor to the 2013 biomass estimate of 1762, resulting in catch advice of no more than 3085 t.

The same approach is used as in 2012, i.e. the 20% precautionary buffer is not applied.

STECF COMMENTS: STECF agrees with the ICES advice. The value of 3085 t advised by ICES represents a reduction of about 50 % on the reported landings for 2011.

9.3.2 Blue Ling (*Molva dypterygia*) in Vb, VI and VII

FISHERIES: The main fisheries are those by Faroese trawlers in Division Vb and French trawlers in Subarea VI and, to a lesser extent, Division Vb. Total international landings from Subarea VII are very small, as are bycatches in other fisheries. Landings by Faroese trawlers are mostly taken in the spawning season. Historically, this was also the case for French trawlers fishing in Division Vb and Subarea VI. However, in recent years blue ling has been taken mainly as a bycatch in French trawl fisheries for roundnose grenadier and black scabbardfish. Total catches (2013) were 2,685 t, where 99% were landings, <1% discards and considered negligible.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	Not defined.	Undefined.
	F_{MSY}	0.07	Based on $F_{50\% SPR}$.
Precautionary approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	

	F_{pa}	Not defined.	

(Last changed in: 2014)

F reference points were estimated based on yield-per-recruit during the 2014 WKDEEP benchmark and revised in WGDEEP 2014 and ADGDEEP. The YPR suggest that $F_{0.1}$ would drive the SSB to 0.31 of the unexploited SSB, which was considered too low. At equilibrium $F_{50\%SPR}$ corresponds to a yield of about 8200 t. Therefore, $F_{50\%SPR}$ is considered an appropriate proxy for F_{MSY}.

Yield and spawning biomass per Recruit F-reference points:

	Fish Mort Ages 9–22
F_{max}	0.31
$F_{0.1}$	0.12
$F_{50\%SPR}$	0.07

STOCK STATUS:

Fishing pressure			
	2011	**2012**	**2013**
MSY (F_{MSY})	✓	✓	✓ Below target
Precautionary approach (F_{pa},F_{lim})	?	?	? Not defined
Stock size			
	2012	**2013**	**2014**
MSY ($B_{trigger}$)	?	?	? Undefined
Precautionary approach (B_{pa},B_{lim})	?	?	? Undefined
Qualitative evaluation	↗	↗	↗ Increasing

The fishing mortality has been decreasing since 2001and is currently below F_{MSY}. The biomass has been increasing since 2004. Recruitment has been estimated as stable over the full time-series.

RECENT MANAGEMENT ADVICE:

Based on the ICES MSY approach ICES advises that annual catches should not be more than 5046 tonnes. All catches are assumed to be landed.

MSY approach

MSY $B_{trigger}$ has not been defined; recent exploitation has declined since 2001 and has been at or below the F_{MSY} proxy for 6 years. The F_{MSY} proxy is considered to be sufficiently precautionary so that it can be used as the MSY target at the current biomass, which is the highest in the last 20 years.

Following the ICES MSY approach implies fishing mortality to be increased to 0.07 resulting in total catches of no more than 5046 t in 2015 and 2016. This is expected to lead to a SSB of 74 600 t in 2016. All catches are expected to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and that annual catches in 2015 and 2016 should not be more than 5046 tonnes. All catches are assumed to be landed.

9.3.3 Blue ling (*Molva dypterygia*) in other areas (I, II, IIIa, IVa, VIII, IX, and XII)

The stock status and advice for this stock for 2015 remains unchanged from that given for 2103 and 2014. The text below therefore remains largely unchanged from the Consolidated STECF review of advice for 2014 (STECF-13-27).

FISHERIES: Blue ling is now taken as by-catch only from other fisheries in Subarea XII and Division IIa. Blue ling has been targeted in trawl fisheries on Hatton Bank (Division XIIb). There has also been a small bycatch in the longline fisheries in Division IIa. Recently Faroese and Norwegian vessels have caught blue ling in this area with longlines and nets. In other areas blue ling is taken in small quantities. The preliminary catch reported in 2013 is 460 t.

REFERENCE POINTS: No reference points have been defined for this assessment unit.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below poss. reference points

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected.

Trends in landings suggest serious depletion in Subarea II. Landings have also declined strongly in Subarea XII from 2002 onwards. Landings in other areas are minor, but there is some evidence of a persistent decline in Subarea IV.

RECENT MANAGEMENT ADVICE: The 2012 advice for this stock was biennial and valid for 2013–2014. New data available do not change the perception of this stock. Therefore the advice for this fishery in 2015 is the same as for 2013: *ICES advises that there should be no directed fisheries for blue ling, and a reduction in bycatches should be considered until the scientific information is sufficient to prove the fishery sustainable. Measures should be implemented to minimize the bycatch. Closed areas to protect spawning aggregations should be maintained and expanded where appropriate.*

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015.

9.4 Tusk (Brosme brosme)

FISHERIES: Tusk is primarily fished in the depth range 200-500 m, though it is also found at shallower depths. Tusk is more vulnerable to overexploitation than ling due to a slower growth rate and higher age at first maturity. The majority of landings are from ICES sub-areas IIa, IIIa, from along the Norwegian coast of IVa, Va (around Iceland), and Vb (around Faroe Islands). This species is taken

mainly in long line fisheries, and most of the catches are by-catches in ling fisheries. Tusk is also taken as by-catch in bottom trawl fisheries.

Before 2008, ICES advised for three management units proposed on the basis of apparent isolation of fishing grounds: Subareas I and II (Arctic), Division Va (Iceland), and Divisions IIIa, IVa, and Vb and Subareas VI, VII, VIII, IX, XII, and XIV (other areas). Reported landings for 2011, 2012 and 2013 are 25.9 kt, 25.48 kt and 19.85 kt respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: The new perception of the stock structure is based on considerations of new genetic information in 2009 (Knutsen *et al.*, 2009). Studies using recently developed microsatellite primers detected highly significant genetic differentiation in tusk within its North Atlantic range. In particular, tusk around Rockall, the Mid-Atlantic Ridge, and off Canada, most likely represent different biological populations that clearly warrant separate management considerations.

As in 2011, ICES provided advice on separate stocks of tusk on the basis of new genetic evidence and advice is presented for the following revised management units:

- I and II (Arctic)
- Division Va and Subarea XIV
- The Mid-Atlantic Ridge (Division XII excluding XIIb)
- Subarea VIb (Rockall)
- IIIa, IV, Vb,VIa, VII, VIII, IX, XIIb, . (This latter grouping is a combination of isolated fishing grounds and these areas are grouped due to their mutual lack of data.)

9.4.1 Tusk (*Brosme brosme*) in Divisions I and II (Arctic)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: Tusk is taken in a mixed fisheries with ling and as a bycatch in fisheries for cod, mainly in longline fisheries. The exploitation is influenced by regulations aimed at other groundfish species, e.g. cod and haddock. Catches are primarily by Norwegian vessels and since 2003, EU vessels have been subject to a restricted TAC. The major fisheries are the Norwegian longline and gillnet fisheries, but there are also bycatches by other gears, i.e. trawls and handline. Other nations catch tusk as a bycatch in trawl fisheries.

Legislation enacted in 2000 to regulate the cod fishery has resulted in a continuous reduction in the number of longliners in the fishery for tusk, ling, and blue ling. By 2011 only 37 vessels above 21 m were in the fishery. Total catch (2011) was 11.7 kt, where 100% were landings (90% longlines, 9% gillnets, and 1% other gear types.) Landings for 2013 were reproted as 8.600 t.

REFERENCE POINTS: No reference points have been defined for this assessment unit. Adult abundance as measured by the commercial index is above the average of the time-series. However, the status of the stock relative to historical levels is unknown and it may have been higher in the past.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Unknown

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected, however a reinterpretation of the historic cpue data suggest that recent catch levels (2006-2011) in Subareas I and II seem to have no detriment effect on the stock, however the level relative to historic level is unknown.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for this fishery in 2015 is the same as the advice for 2013: *Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 9040 t.*

Other considerations

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented. The resulting limit should stay in place at least two years unless stock information shows a change that merits updating the advice.

For this stock, ICES advises that catches should decrease by 20% compared to the average catch of the last three years, corresponding to catches of no more than 9040 t in 2013 and subsequent years.

The major part of the fishery is managed through input controls. The available information show no negative affect on the stock from the current fishing effort. However, it is unknown if the current exploitation is appropriate in regard to MSY; ICES therefore advises no increase in effort.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and the advice for 2015. The value of 9040 t advised by ICES represents a reduction of 20 % on the average reported landings for 2009-2011.

9.4.2 Tusk (*Brosme brosme*) in Division Va and Subarea XIV

FISHERIES: Tusk is largely (98%) caught in a mixed fishery by longline fisheries in Division Va. Tusk is caught both in shelf areas and on the continental slope. In Subarea XIV tusk is caught as a bycatch species in small quantities.

Total catches (2013) were 6283 t (98% longline). Discards are considered negligible.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY approach	MSY $B_{trigger}$	Not defined.	
	F_{MSY}	0.2	Based on stochastic simulations.
Precautionary approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	

	F_{pa}	Not defined.	

Yield and spawning biomass per Recruit F-reference points

	Fish Mort Ages 7–10
F_{max}	0.24
$F_{0.1}$	0.15

STOCK STATUS:

Fishing pressure				
	2011	**2012**	**2013**	
MSY (F_{MSY})	✗	✗	✗	Above target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

Stock size				
	2012	**2013**	**2014**	
MSY ($B_{trigger}$)	?	?	?	Not defined
Precautionary approach (B_{pa},B_{lim})	?	?	?	Not defined
Qualitative evaluation	✓	✓	✓	Above poss. reference points

Recruitment peaked in 2004 to 2006 but has since declined to a historical low level in 2013. Fishing mortality has declined in recent years and is above the current FMSY estimate. SSB has been increasing in recent years and is likely above candidate MSY Btrigger.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 3950 t. All catches are assumed to be landed.

Other considerations

MSY approach

Following the ICES MSY approach implies fishing mortality to be reduced to 0.20. This implies catches of no more than 3950 t in 2015 and a stable spawning-stock biomass in the short term.

Additional considerations

Management considerations

The overshoot in the set TAC for ling for the Icelandic fleet is a result of the allowance, albeit limited, for exchanging the quota (individual transfer quota, ITQ) of one species for another. The allowance has the objective of limiting discarding and misreporting.

Information from commercial catch data and surveys indicate that tusk in Division Va and Subarea XIV is at present in a good state. This is confirmed in the Gadget model assessment. However, the drop in recruitment since 2005–2006 will result in a decline in fishable biomass and sustainable catches in the coming years.

Closures of known spawning areas and areas of high juvenile abundance should be maintained.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice that following the ICES MSY approach implies catches of no more than 3,950 t in 2015 and a stable spawning-stock biomass in the short term.

9.4.3 Tusk (*Brosme brosme*) on the Mid-Atlantic Ridge (Division XII excluding XIIb)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014.

FISHERIES: Tusk is a bycatch species in this area. Since 2003, reported catches have not exceeded 7 t, and in most years 0 t.

REFERENCE POINTS: No reference points have been defined for this assessment unit.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Unknown

The only available information is landing statistics, with sporadic very low catches showing no trend. Catches from this area have been small and no catches have been reported for the last four years. No scientific analyses have been carried out.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for this fishery in 2015 is the same as the advice for 2013: ICES advises on the basis of the approach for data-limited stocks that catches should not be increased unless there is evidence that this is sustainable. Measures should be taken to limit occasional high levels of bycatch.

Other considerations

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected.

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented. The resulting limit should stay in place for at least two years unless stock information shows a change that merits updating the advice.

For this stock, since the current catches are around zero, ICES advises that catches should not increase unless there is evidence that this is sustainable. Occasional high bycatches should be avoided.

STECF COMMENTS: STECF agrees with the ICES advice for 2013, 2014 and 2015.

9.4.4 Tusk (*Brosme brosme*) in Subarea VIb (Rockall)

FISHERIES: Tusk is a bycatch species in the trawl, gillnet, and longline fisheries in Division VIb. Norway has traditionally caught the largest percentage of the total catch.

Since January 2007 parts of the Rockall bank have been closed to fishing with bottom trawls, gillnets, and longlines. The closed areas were traditional fishing grounds for the Norwegian longline fleet.

In 2004 Russia initiated a longline fishery of ling with a bycatch of tusk in international waters of the Rockall Bank. The maximum catch (137 t) was taken in 2005. In recent years the intensity of the Russian longline fishery has decreased. Small bycatches of tusk were also taken in the area by trawlers targeting haddock.

Total catch (2013) was 0.058 kt, where 100% were official landings (79% longline and 21% other gear types). Discard information is not available but all catches are likely to be landed.

REFERENCE POINTS: No reference points have been defined for this assessment unit.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

	Stock size	
		2012–2014
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable at low level

The only information on abundance of tusk is from a standardized cpue index from the Norwegian longline fishery which indicates a stable stock in the recent years. The landings have been low and decreasing since 2001.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the data-limited approach that annual catches should be no more than 350t. All catches are assumed to be landed.

Other considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

The PA Buffer was applied for the advice given in 2012. The new data on cpue available for this stock (3% increase) do not change the perception of the stock. Therefore, the advice for this fishery in 2015

is the same as the advice for 2013–2014 which implies annual catches of no more than 350 t in 2015–2016.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and that on the basis of the ICES data-limited approach, annual catches should be no more than 350t.

9.4.5 Tusk (*Brosme brosme*) in IIIa, IV, Vb, VIa, VII, VIII, IX, XIIb (Other areas)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: Tusk is a bycatch species in longline, trawl, and gillnet fisheries for a range of species, including ling and other gadoids. Norway has traditionally landed a large share of the total international landings and in 2011 Norwegian landings for all areas except Division Vb constituted 86% of the total landings. Ca. 90% of the Norwegian landings are taken by longliners. The Faroese fleet caught nearly all landings in Division Vb in 2011 because of no bilateral or multilateral agreements between the Faroes and Norway/EU. Total catch (2011) was 6.4 kt, where 100% were landings (90% longliners, 5% trawlers, and 5% gillnets). Reported landings for 2012 and 2013 are 6.85 kt and 4.86 kt respectively.

REFERENCE POINTS: No reference points have been defined for this assessment unit. However, as adult abundance as measured by Faroese surveys and all commercial indices is above the average of the time-series, SSB is considered to be likely above any candidate values for MSY $B_{trigger}$.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✓	Above possible reference points

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected. Landings in all subareas have been stable since 2002. Both Faroese survey indices show an increasing trend since the early 2000s and cpue series both from the Faroes fishery in Division Vb and Norwegian longline fisheries in Divisions IVa, Vb, and VIa (not standardized) show similar trends. The average of the stock size indicator (the Faroese survey indices, number/hour) in the last two years (2010–2011) is substantially higher than the average of the three previous years (2007–2009).

RECENT MANAGEMENT ADVICE:

Advice for 2015

The 2012 advice for this stock was biennial and valid for 2013–2014. New data available do not change the perception of this stock. Therefore the advice for this fishery in 2015 is the same as the advice for 2013–2014: Based on the ICES approach for data-limited stocks, ICES advises that catches should be no more than 8500 tonnes.

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For the data-limited stock with abundance information from fishery-independent data ICES uses as harvest control rule the abundance index-adjusted *status quo* catch, which provides advice based on a comparison of the last two years of abundance data compared to the previous three years, combined with the catch data available from previous years. Knowledge on the exploitation status influences the impact of the biomass changes on the advised catch.

For this stock the abundance is estimated to have increased by more than 20% in 2007–2009 (average of the three years) and 2010–2011 (average of the two years). This implies an increase of catches of at most 20% compared to the average catch of the last three years, corresponding to catches of no more than 8500 t.

As the exploitation is not detrimental to the stock (even though the exploitation status is unknown) and the biomass has increased more than 50%, no additional precautionary reduction is needed.

STECF COMMENTS: STECF notes that ICES assumes that the trends in the Faroese CPUE time series is representative of trends in the stock in geographically widespread areas, which may not be the case. The advice implies an increase in the average of the 2009 -2011 landings of 20%. STECF considers that because of the uncertainty concerning the representativeness of the trends in the Faroese CPUE series for the stock as a whole, a more precautionary approach would be to restrict landings to the average level over the period 2009-2011. Adopting such an approach would imply landings to 7.1 kt.

9.5 Greater silver smelt or argentine (*Argentina silus*)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: Argentine is primarily fished in the depth range 100 to 700 m. The majority of landings are from ICES sub-areas IIa, IIIa, IVa along the Norwegian coast, Va (around Iceland), and Vb (around Faroe Islands). This species is taken mainly in long line fisheries, and most of the catches are by-catches in ling fisheries. This species is also taken as by-catch in bottom trawl fisheries. The Norwegian fishery accounts for the more than 50% of total catches. The total landings from the whole area in 2011 were 45,551 tonnes. Reported landings from all areas in 2012 and 2013 are 38.2 kt and 38.8 kt respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES. No reliable analytical assessment is available.

STOCK STRUCTURE: There is insufficient scientific information to establish the extent of putative stocks; however, argentine may be sufficiently isolated at separate fishing grounds to be considered as individual management units. On this basis advice is presented for the following management units:

- Sub-area Va (Iceland); and

- Sub-areas I, II, IIIa, IVa, Vb, VI, VII, VIII, IX, and XII (other areas).

The latter grouping is a combination of isolated fishing grounds and these areas are thus grouped due to their mutual lack of data.

The stock definition for greater silver smelt is unclear. To evaluate the stock structure further, a holistic approach (studies on genetics, oceanography, morphometric and meristic analysis, and tagging) is needed for the entire distribution area of greater silver smelt.

9.5.1 Greater silver smelt (*Argentina silus*) in Va (Iceland)

FISHERIES: The fishery in Division Va for greater silver smelt is largely driven by market factors and has expanded rapidly since 2007 and subsequently the fishery has changed from a small-scale complementary fishery to the redfish fishery and on to a targeted fishery. More than 70% of the greater silver smelt caught in Division Va is taken in hauls where it composes 50% or more of the total catch of the haul, implying that this is a directed fishery. Total landings in 2011 were 10,515 t, where 100% were taken in trawl fisheries. Landings in 2012 and 2013 from Va are reported as 9,290 t and 7,154 t respectively.

REFERENCE POINTS: There is no analytical basis on which to calculate biological reference points.

STOCK STATUS:

F (Fishing Mortality)		
	2007–2011	
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	→	Stable

SSB (Spawning-Stock Biomass)		
	2007–2011	
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

Survey indices show a small reduction in stock biomass in 2013. The F proxy has remained at similar levels since 2012; this indicates an increase in exploitation compared to 2002 – 2007.

RECENT MANAGEMENT ADVICE:

Based on ICES approach to data -limited stocks, ICES advises that catches should be no more than 4033 tonnes. All catches are assumed to be landed.

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For this stock the F proxy of 0.121 is applied as a factor to the 2013 biomass estimate, resulting in catch advice of no more than 4033 t. All catches are assumed to be landed.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock and the advice for 2015.

9.5.2 Greater silver smelt (*Argentina silus*) in other areas (I, II, IIIa, IV, Vb, VI, VII, VIII, IX, X, XII and XIV)

The ICES advice for 2015 remains the same as for 2014. Hence the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: There are presently three main areas where directed fisheries are conducted within the assessment unit area: around the Faroes (Division Vb), west of mid-Norway (Division IIa), and Subareas VI and VII. Landings in Division Vb doubled between 2005 and 2006 and have remained stable at this level since. Though landings from Division IIa have fluctuated, they have remained stable in the last four years. Landings in Subareas VI and VII declined significantly between 2002 and 2009 and increased in 2010 and 2011. Total landings in 2011, 2012 and 2013 were 35,036 7, 28,885 t and 31,709 t respectively.

REFERENCE POINTS: No reference points have been defined for this assessment unit.

STOCK STATUS: The state of the silver smelt resource in "other areas" is unknown. Catches increased considerably in recent years, but were reduced in 2003 in some areas, partly due to introduction of TAC management in EU waters. There is no evidence of a decline in biomass in Division Vb. Biomass in Subarea VII declined between 2001 and 2007 and has remained stable at about half the initial value since. Trends in abundance in Division IIa are unknown.

RECENT MANAGEMENT ADVICE:

The 2012 advice for this stock was biennial and valid for 2013–2014 (ICES, 2012). New data available do not change the perception of this stock. Therefore the advice for this fishery in 2015 is the same as in 2013: Based on the ICES approach for data - limited stocks, ICES advises that catches should be no more than 31300 tonnes.

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the abundance is estimated to have increased by 10% (a catch-weighted mean between the index for Division Vb and the one for Porcupine Bank) between 2007–2009 (average of the three years) and 2010–2011 (average of the two years). This implies an increase in catches of at most 10% in relation to last year's catch, corresponding to catches of no more than 39 115 t.

Additionally, considering that exploitation is unknown, ICES advises that catches should decrease by a further 20% as a precautionary buffer. This results in catches of no more than 31 292 t in 2013.

STECF COMMENTS: STECF notes that the 10% reduction is on the basis of a 10% increase with a 20% precautionary discount. Applying a 20% reduction in light of an SSB increase seems counter intuitive in principle, because over time such measures are cumulative and catches will be driven down on the basis of managment measures. However in this case the evidence of an increase in biomass is very weak and biomass appears to be at significantly less than 50% of historic levels. For such a long-lived low productivity species this should suggest that F needs to be reduced more rapidly to be precautionary until a more significant response in biomass is observed.
STECF notes that an independent assessment of greater silver smelt in Division Vb has been undertaken by Faroese scientists but it is unclear whether the trends in the stock and exploitation rate are representative of the trends of the stock in other areas.

9.6 Black scabbardfish (*Aphanopus carbo*) in the Northeast Atlantic

FISHERIES: In Subareas VI, VII, and XII, and Division Vb, black scabbardfish is mainly taken in mixed-trawl fisheries along with roundnose grenadier and blue ling, although species targeting may occur within the mixed fishery. The bulk of the landings come from Subarea VI. In recent years landings from Subarea VII have been greatly reduced. Due to the mixed nature of the trawl fisheries in Subareas VI, VII, and XII, and Division Vb, any measure taken to manage this species in these areas should take into account the advice given for other species taken in the same mixed fishery. Fisheries on the adjacent areas are variable and generally contribute a low proportion of the stock catches.

Black scabbardfish is taken in the waters of ICES Division IXa by a targeted longline fishery that started in the late 1980s on restricted fishing grounds.

Discarding is considered negligible.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: The stock structure is uncertain. Scabbardfish is considered by ICES as one stock. The main distribution area has been identified as Subareas VI, VII, VIII, and IX and Divisions Vb, IXa, and XIIb. The stock assessment is based on the data from this main area. Adjacent areas, Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va include a low proportion of the stock catches.

Assessed area: Subareas VI, VII, VIII, and IX, and Divisions Vb, IXa, and XIIb

Adjacent areas: Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va

All the available studies suggest that a single stock migrates through the Northeast Atlantic. In the ICES areas there are only immature specimens and available studies suggest that fish from the northern part of the assessed area (Subareas VI and VII, and Divisions Vb and XIIb) are pre-adults that migrate to the southern part of the assessed area (Subareas VIII and IX). Catches from the two parts of the assessed area show a difference in modal length and body weight; on average, specimens from the southern part are 40% heavier than those from the northern part. The only known spawning areas are in the CECAF area (Madeira and Canary Islands waters). Compared to other deep-water species the growth rate of black scabbardfish is relatively high. Black scabbardfish has a longevity of 15 years.

REFERENCE POINTS: No precautionary reference points have been established for the stock(s) of this species.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary	?	Unknown

approach (F_{pa},F_{lim})		
Qualitative evaluation		Declining

Stock size		
		2012–2014
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Stable

The stock abundance has been stable since 2002. Harvest rates indicate a slight decrease in exploitation for fisheries in Subareas VI and VII, and in Division Vb and XIIb (northern parts) and a stable exploitation for fisheries in Subarea VIII and Division IXa (southern part). Catches in the assessed area have decreased since 2002 and catches in the remaining stock areas, Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va, have fluctuated over time.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the approach to data-limited stocks that there should be annual catches of no more than 2802 t in Subareas VI, VII, and Divisions Vb, XIIb, annual catches of no more than 2726 t in Subarea VIII and Division IXa; and annual catches of no more than 366 t in the adjacent areas (Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va).

Additional considerations

ICES approach to data-limited stocks

The advisory rule based on proposals from WKDEEP 2014, follows the general principles of the ICES DLS approach, though the rule is modified to provide additional protection against local depletion in the northern and southern parts of the assessed area.

This rule adjusts total catches for both parts of the assessed area according to recent trends in abundance for the northern and southern parts separatedly. The abundance trends from both parts in the most recent five years are applied in combination with a rule that specifies that catch advice should only increase when the abundance trends for both parts are increasing. If either part is stable or decreasing, the advised catch for both parts is adjusted according to the rate of change in the part showing the decrease.

It is not considered necessary to apply and additional precautionary buffer because the estimated harvest rates have been observed to decline over the last 5 years. They are considered low (less than 0.05), below and any potential candidates for a proxy for FMSY.

For the catches in the adjacent area which has no assessment, the catch advice follows the same advised change.

For this year, the abundance indices in both parts are constant. Thus, according to the advisory rule the catches should be maintained at the same level as in 2013.

This implies catches of 5528 t in the assessed area and 366 t in the adjacent area (Subareas I, II, IV, X, XIV, and Divisions IIIa and Va). For the assessed areas this corresponds to catches of no more than 2802 t for Subareas VI, VII, and Divisions Vb, IXIIb, and catches of no more than 2726 t for Subarea VIII and Division IXa.

Other considerations

Comparison of the basis of previous assessment and advice

ICES previously had three advice areas. At the most recent benchmark it was decided to combine the largest two of these (in terms of catch) in an assessment model based on a single population that is exploited differently in each part and migrates between these parts. The third area, where around 6% of recent total catch is taken, was originally provided with a separate advice sheet. The biology indicates that the fisheries is exploiting a single population that migrates through the whole area. Therefore ICES advises on the basis of an assessment of the main part of the area where suffient data are available.

The basis for the assessment changed compared to last year. This year's assessment is based on a Bayesian life stage model and was benchmarked in 2014.

The basis for the advice this year is the same as last year: ICES approach to data-limited stocks.

STECF COMMENTS: STECF agrees with the assessment of the state of the stock and the advice for 2015 and 2016.

9.6.1 Black scabbardfish (*Aphanopus carbo*) in Subareas VI, VII, VIII, and Divisions Vb, IXa, and XIIb – ASSESSED AREA

FISHERIES: In Subareas VI, VII, and XII, and Division Vb, black scabbardfish is mainly taken in mixed trawl fisheries along with roundnose grenadier and sharks, although some trawl fisheries can target specific species within the mixed fishery. Due to the mixed nature of the trawl fisheries in Subareas VI, VII, and XII, and Division Vb any measure taken to manage this species in these areas should take into account the advice given for other species taken in the same mixed fishery. The total reported landings in 2011, 2012 and 2013 from these areas are 6.5 kt, 5.7 kt and 5.5 kt respectively.

REFERENCE POINTS: No reference points have been proposed for this stock.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	↘	Declining

	Stock size	
		2012–2014
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✓	Stable

The stock abundance has been stable since 2002. Harvest rates indicate a slight decrease in exploitation for fisheries in Subareas VI and VII, and in Division Vb and XIIb (northern parts) and a

stable exploitation for fisheries in Subarea VIII and Division IXa (southern part). Catches in the assessed area have decreased since 2002 and catches in the remaining stock areas, Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va, have fluctuated over time.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the approach to data-limited stocks that there should be annual catches of no more than 2802 t in Subareas VI, VII, and Divisions Vb, IXIIb, annual catches of no more than 2726 t in Subarea VIII and Division Ixa.

STECF COMMENTS: STECF agrees with the assessment of the state of the stock and the advice for 2015 and 2016.

9.6.2 Black scabbardfish (*Aphanopus carbo*) in ICES Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va – adjacent area not assessed

FIHERIES: Black scabbardfish is taken in in small quantities as a by-catch in trawl fisherues and is a target for some deep-water longlines.

REFERENCE POINTS: There are no reference points proposed for this stock.

STOCK STATUS: Unknown.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the approach to data-limited stocks that there should be annual catches of no more than 366 t in these areas (Subareas I, II, IV, X, and XIV, and Divisions IIIa and Va).

STECF COMMENTS: STECF agrees with the assessment of the state of the stock and the advice for 2015 and 2016.

9.6.3 Black scabbardfish (*Aphanopus carbo*) in the CECAF area

STECF did not have access to any recent information on the status or advice for the management of fisheries for black scabbard fish in the CECAF area.

9.7 Greater forkbeard (*Phycis blennoides*)

FISHERIES: The landings of greater forkbeard are mainly bycatch from shelf and upper slope demersal trawl and longline fisheries targeting species such as hake, megrim, monkfish, ling, and deep-water fish. Since 1988, around 78% of landings have come from Subareas VI and VII, and 13% from Subareas VIII and IX (mainly from Subarea VIII). Fluctuations in landings are probably the result of changing effort on different target species and/or market prices and may not necessarily be linked with changes in forkbeard abundance.

Total landings in 2013 were 1.8 kt. Discard estimates available to ICES were 1.16 kt. International landings by fleet come from LLS (50%), OTB (31%), MIS (17%), and GNS (2%). Discards are substantial, but only quantified for part of the fisheries.

TACs are set separately for a) ICES subareas I, II, III and IV, b) ICES subareas V, VI and VII, c) ICES subareas VIII and IX and d) ICES subareas X and XII.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

REFERENCE POINTS: No reference points have been established for the stock(s) of this species.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
		2009–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	↗	Increasing

The biomass index for Subareas VII and VIII indicates a substantial increase in stock abundance since 2009.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the approach to data-limited stocks, but cannot quantify the resulting catches. This implies annual landings of no more than 2628 tonnes.

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted *status quo* catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the stock biomass, as measured in four combined surveys, is estimated to have increased by more than 86% between the periods 2009–2011 (average of the three years) and 2012–2013 (average of the two years). This implies an increase of catches of at most of 20% in relation to the last three years, which leads to an increase in landings from 2190 tonnes to no more than 2628 tonnes.

The abundance index shows a substantial increase. Therefore the precautionary buffer was not applied to the catch advice.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and notes that based on the ICES approach to data-limited stocks implies landings in 2015 of no more than 2628 t.

9.8 Orange roughy (*Hoplostethus atlanticus*)

FISHERIES: In Subareas VI and VII there have been two fisheries for orange roughy: a targeted seamount fisheries on distinct topographical features and a mixed-trawl fisheries along the continental slope that had orange roughy as a bycatch. In ICES Subarea VI, a targeted French trawl fishery began

in 1989 centred on spawning aggregations around the Hebrides Terrace Seamount. Landings in this area peaked at 3500 t in 1991, and 5300 t were removed from the stock by the end of 1993. The cumulative landings of orange roughy in Subarea VI from 1990 to 2010 were 7200 t. In ICES Subarea VII, a targeted French orange roughy fishery first developed in 1991, with initial landings increasing to over 3000 t in 1992. An Irish fishery commenced in 2001 and landings peaked at over 5000 t in 2002. The total accumulated landings in Subarea VII in the same period is 24 600 t. Due to zero TACs and depleted stock levels there are no more targeted fisheries for orange roughy in Subareas VI and VII. Observer data from the French mixed deep-water trawl fishery suggest that the bycatch of orange roughy is low.

Local fisheries have existed historically in Divisions Va and Vb and Subareas VIII and X, and to a greater extent in Subarea XII. Cumulative landings since 1990 in all these areas have been 11 000 t, including 5700 t in Subarea XII. A Faroese exploratory trawl fisheries occurred along the Mid-Atlantic Ridge targeting orange roughy and black scabbardfish. The status of these fisheries in 2013 is uncertain.

Total catches for all areas in 2013 were 71 tonnes, of which 98% were landings (demersal trawl).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: It is not known if individual aggregations are reproductively distinct.

REFERENCE POINTS: Potential reference points for orange roughy in Subareas VI and VII have been evaluated and indicate that sustainable fishing levels would be very low (F_{MSY} proxies = 0.04–0.06) and similar to natural mortality.

STOCK STATUS:

	Fishing pressure	
		2006–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	↘	Decreasing

	Stock size	
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	Below possible reference points

There have been no directed EC fisheries in the Northeast Atlantic since 2010. Historical orange roughy cpue data in Subarea VI show a strong declining trend since the early 1990s and it is presumed that the aggregations were fished out. Orange roughy fisheries in Subarea VII exhibited a similar pattern to that in Subarea VI, suggesting sequential depletion, but it is not known if unfished aggregations remain in Subarea VII. There is insufficient information to evaluate the status of the stock in other areas.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of precautionary considerations that there should be no directed fishery and bycatch should be minimized.

Due to its very low productivity, orange roughy can only sustain very low rates of exploitation. Based on the current information, it is not possible to manage a sustainable fishery for this species.

Other considerations

Orange roughy catches in Subarea VI increased rapidly and subsequently dropped. Orange roughy cpue in Subarea VI has shown a strong declining trend since the early 1990s. It is presumed that the aggregations were fished out.

Orange roughy fisheries in Subarea VII have exhibited a similar pattern to that in Subarea VI. High catches have not been sustained by individual fleets and have dropped to low levels, suggesting sequential depletion. Orange roughy cpue in Subarea VII has shown a strong declining trend since the early 1990s.

Due to stringent management restrictions including a zero TAC and protection areas, the fishery for orange roughy in Subareas VI and VII has now ceased. A zero TAC without allowing a bycatch can potentially lead to discarding if existing fisheries overlap with the distribution of orange roughy. Examination of French observer data suggests that bycatch and discarding of orange roughy is currently not significant (< 0.2%).

A PSA (productivity susceptibility analysis) was used to examine the temporal change in relative susceptibility of orange roughy in Subareas VI and VII to recent and current deep-water fisheries by evaluating fishing practices and estimating spatial overlap as monitored with VMS. Results showed that the susceptibility of orange roughy to current fisheries in Subarea VII has substantially decreased from 2006 to 2012, due to a reduction in fishing effort and spatial overlap and a change from a directed fisheries on spawning aggregations of orange roughy to mixed-trawl fisheries targeting other species.

To have a basis for a potential opening of a directed fishery, abundance estimates near topographic features (i.e. seamounts) are required to provide a current baseline. Subsequent periodic surveys at decadal intervals will be needed to monitor the stock development.

STECF COMMENTS: STECF agrees with the ICES assessment of the state of the stock and the advice for 2015 and 2016.

9.9 Roundnose grenadier (*Coryphaenoides rupestris*)

FISHERIES: The majority of international landings are from the Skagerrak (III), Faroes (Vb), west of Scotland and Rockall Trough (VI), west of Ireland and Western Approaches (VII) and the Mid-Atlantic ridge and western Hatton Bank (XII). In most areas, roundnose grenadier is the target species of mixed trawl fisheries. Total landings in 2013 were around 5,700 t.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCK STRUCTURE: This section deals with a species distributed over a wide area, which may be composed of several populations. The scientific basis for stock identification is uncertain. The Wyville-Thomson Ridge and fjord sills, between Western Scotland and the edge of the North Sea slope, could be natural physical boundaries. It is therefore considered that the northern North Sea and the Norwegian Deep could represent a separate unit. The roundnose grenadier on the Mid-Atlantic Ridge and the Hatton Bank are separated by a major oceanic basin and may constitute separate units. This would indicate that the units could be split as:

- Divisions IIIa;
- Divisions Vb, VI, VII, and XIIb (Hatton bank);
- Mid-Atlantic ridge (Subdivisions Xb, XIIc, Va1, XIIa1, and XIVb1) ;

- All other areas (I, II, IV, Va2, VIII, IX, XIVa, XIVb2).

9.9.1 Roundnose grenadier (*Coryphaenoides rupestris*) in Division IIIa

FISHERIES: A total of only 2–3 vessels actively participated in the fishery during the period of peak catches in 2002–2005. Since 2007 there has been no directed fishery, and at present this species is taken only as bycatch and only in small amounts(less than 500 t year^{-1} in 2009–2011). Total landings in 2013 were estimated as 1 t. Discards are unknown.

REFERENCE POINTS: No reference points have been established for the stock(s) of this species.

STOCK STATUS:

Fishing pressure		
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

Stock size		
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	→	Stable at a low level

Catches appear to have been stable at about 1000 tonnes in the 1990s. Large increases in catches in the early 2000s are considered to have been unsustainable on the basis of the biology of the species and the small geographical extent of the fishery (in one ICES rectangle alone). Landings after 2006 are zero due to zero TAC in the Norwegian sector. Catches in recent years are mostly bycatch in the Norwegian shrimp fishery.

The stock size indicator has been low since 2010.

RECENT MANAGEMENT ADVICE: ICES advises on the basis of the precautionary considerations that there should be no directed fishery and bycatch should be minimized.

Other considerations

No reliable assessment can be presented for this assessment unit and fishing possibilities cannot be projected.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock and the advice for 2015 and 2016.

9.9.2 Roundnose grenadier (*Coryphaenoides rupestris*) in Subareas VI and VII and in Divisions Vb and XIIb

FISHERIES: Roundnose grenadier is caught in a mixed fishery catching also black scabbardfish and blue ling. Landings in recent years have been below TACs both in Division Vb, Subareas VI, VII, and

Division XIIb. Discards accounted for about 30% of the catch in weight and 50% in number for the French fleets. Discards for the Spanish fleets are 10–18% of the landings in weight. In 2013, French discards have been reduced to 15% of the catch due to fishing activity in shallower waters and avoidance strategy. Spanish discard rates are estimated to be around 5% of the catch. Discard patterns from other countries are unknown.

Total catch in 2013 (provisional data) was 3.8 kt, where 3.2 kt were estimated landings (100% deep-water trawl) and 0.6 kt discards.

REFERENCE POINTS:

	Type	***Value***	***Technical basis***
MSY Approach	MSY $B_{trigger}$	41 437 t	B_{loss} (in 2006 in the 2014 assessment).
	B_{MSY}*	68 975 t	Half of carrying capacity *K*, estimated from the surplus production model (2014).
	F_{MSY}*	0.08	Half of the intrinsic growth rate *r*, estimated from the surplus production model (2014).
Precautionary Approach	B_{lim}	Not defined.	
	B_{pa}	Not defined.	
	F_{lim}	Not defined.	
	F_{pa}	Not defined.	

(Last changed in: 2014)

* Estimates of MSY $B_{trigger}$, B_{MSY}, and F_{MSY} apply to Division Vb and Subareas VI and VII only.

STOCK STATUS:

Fishing pressure				
	2011	**2012**	**2013**	
MSY (F_{MSY})	✓	✓	✓	Below target
Precautionary approach (F_{pa},F_{lim})	?	?	?	Not defined

Stock size				
	2012	**2013**	**2014**	
MSY ($B_{trigger}$)	✓	✓	✓	Above trigger
Precautionary approach (B_{pa},B_{lim})	?	?	?	Not defined

Total biomass for Division Vb and Subareas VI and VII is estimated to have been around MSY Btrigger since 2002 but slightly increasing since 2006. The harvest rate has decreased since 2000 and has been below target F_{MSY} (H_{MSY}) since 2010.

RECENT MANAGEMENT ADVICE:

ICES advises on the basis of the MSY approach that catches should be no more than 4595 t in 2015 and 4673 t in 2016 for Division Vb and Subareas VI and VII. If discard rates do not change from the average of the last three years (2011–2013), this implies landings of no more than 3952 t in 2015 and 4019 t in 2016.

Following the precautionary approach ICES advises annual catches of no more than 838 tonnes in 2015 and 2016 for Division XIIb. If discard rates do not change this implies annual landings of no more than landings in 2013 (796 t).

Other considerations

MSY approach

Following the ICES MSY approach implies fishing at a F_{MSY} harvest rate of 0.08 for Division Vb and Subareas VI and VII, which implies landings of no more than 3952 t in 2015 and 4019 t in 2016 for Division Vb and Subareas VI and VII. If discard rates do not change from the average of the last three years (2011–2013), this implies catches of no more than 4595 t in 2015 and 4673 t in 2016.

Precautionary approach

Landings in Division XIIb have been declining in recent years. Following the precautionary approach ICES advises that landings should be no higher than those in 2013 (796 t). If discard rates (5%) do not change this implies catches of no more than 838 tonnes in 2015 and 2016 for Division XIIb.

STECF COMMENTS: STECF notes that the ICES advice for roundnose grenadier (in Vb, VI, VII and XIIb) is based on an assessment and catch forecast for the component of the stock in Division Vb, and Subareas VI and VII only. Furthermore, while the mean estimate of biomass for the stock in Vb, VI, VII has increased slightly over the last two years, it remains at only about 30% of the estimated mean level for the beginning of the time-series (1988) and is close to the MSY Btrigger reference point.

Based on ICES' projections, fishing at FMSY implies landings of 3952 t in 2015 and 4019 t in 2016 and will give rise to a small (2%) increase in stock biomass. Such a slow response in biomass to fishing at FMSY implies that the recovery of the stock to BMSY (68,935 t) will take many years (in the order of 20 years), assuming no other changes in the environment or fishery). STECF notes that even with no fishing, the biomass is only predicted to increase by 10% by 2017.

Furthermore, the low landings from Vb, VI and VII observed over the last three years (2011 = 1577 t, 2012 = 2501 t, 2013 = 1498 t; average = 1862 t) have not resulted in any significant increase in stock biomass. STECF notes tht fishing at F_{MSY} potentially implies more than a 2-fold increase in landings in 2015 compared to the average landings over the most recent 3 years. Given the uncertainty in the assessment results, such an increase in landings (and catch), increases the risk that recovery of the stock biomass to levels that will deliver MSY will be impeded. STECF considers that restricting landings in 2015 and 2016 to less than the recent average level of 1862 t would be a more appropriate risk-averse approach and is likely to lead to a more rapid recovery of the stock biomass.

Given that roundnose grenadier is taken in a deepwater mixed fishery, there is a need to harmonise management measures to account for the management requirements for other species taken.

9.9.3 Roundnose grenadier (*Coryphaenoides rupestris*) on the Mid-Atlantic ridge (Xb, XIIc, Va1, XIIa1, and XIVb1)

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: The greatest annual catch (almost 30 000 t) in the area was taken by the Soviet Union in 1975 and in subsequent years the Soviet catch varied from 2800 to 22 800 t (Figure 9.4.15.3.1). In the last 15 years a sporadic fishery has taken place by vessels from Russia (annual catch estimated at 200–3200 t), Poland (500–6700 t), Latvia (700–4300 t), Spain (1600–3400 t), and Lithuania (data on catch are not available). Grenadier has also been taken as a bycatch in the Faroese orange roughy fishery and the Spanish blue ling fishery. The roundnose grenadier fisheries in Divisions Xb and XIIc, and Subdivisions Va1, XIIa1, and XIVb1 are managed by a TAC for European Community vessels. In international waters NEAFC regulations control efforts in the fisheries for deep-water species. Estimated total catches in 2011, 2012 and 2013 were 2440 t, 3822 t and 1907 t respectively.

REFERENCE POINTS: No reference points have been established for the stock(s) of this species.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Insufficient information

RECENT MANAGEMENT ADVICE: The 2012 advice for this stock was biennial and valid for 2013–2014. New data available do not change the perception of this stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2013–2014. However, ICES notes that catches for the period 2010–2011 have been revised substantially downwards and mean catch for 2009–2011 is now 896 t (compared to the previous estimates of 1687 t). Applying the same 20% reduction to the revised catches gives catch advice of 717 t.

Based on ICES approach to data-limited stocks, ICES advises that catches should be no more than 717 t.

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented.

For this stock, ICES advises that catches should decrease by 20% compared to the average catch of the last three years, corresponding to catches of no more than 1350 t in 2013 and subsequent years.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock is unknown and with the advice for 2014-2016.

9.9.4 Roundnose grenadier (*Coryphaenoides rupestris*) in all other areas. (I, II, IV, Va2, VIII, IX, XIVa, and XIVb2)

The ICES advice for 2015 remains the same as for 2014. Hence, the text below remains largely unchanged from the STECF Consolidated Review of Advice for 2014 (STECF 13-27).

FISHERIES: There have been no directed fisheries, and roundnose grenadier were taken as bycatch in bottom trawls only in small amounts in a number of discrete areas. Total catch in 2011, 2012 and 2013 were 115 t, 89 t and 103 t respectively.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

The assessment is based on landings data and is indicative of trends. This assessment unit consists of a number of discrete areas in which only very small catches of roundnose grenadier occur.

REFERENCE POINTS: This is a bycatch fishery and advice on this stock should take advice for other stocks into account.

STOCK STATUS:

F (Fishing Mortality)		
	2009–2011	
Qualitative evaluation	?	Unknown

SSB (Spawning-Stock Biomass)		
	2009–2011	
Qualitative evaluation	?	Unknown

Catches across this assessment unit are minor and have declined to very low levels in recent years. This is a bycatch fishery so trends in landings may reflect changes in activity in other fisheries rather than stock abundance. Catches in early years may include an element of species misidentification.

RECENT MANAGEMENT ADVICE: The 2012 advice for this stock is biennial and valid for 2013 and 2014. New data available do not change the perception of the stock. Therefore, the advice for this fishery in 2015 is the same as the advice for 2013: *Based on the ICES approach for data-limited stocks, ICES advises that fisheries should not be allowed to expand from 120 t until there is evidence that this is sustainable.*

Other considerations

No analytical assessment is available for this stock. Therefore, detailed management options cannot be presented.

ICES approach to data-limited stocks

For data-limited stocks without information on abundance or exploitation ICES considers that a precautionary reduction of catches should be implemented. The resulting limit should stay in place for at least two years unless stock information shows a change that merits updating the advice.

For this stock, since catches are marginal and consist of bycatches, and there is no indication of high discard rates, ICES advises that catches should not exceed 120 t, the average catch from the last three years, unless there is evidence that this is sustainable.

STECF COMMENTS: STECF agrees with the ICES assessment that the state of the stock in these areas is unknown and with the advice for 2015.

9.10 Red (blackspot) seabream (*Pagellus bogaraveo*) in ICES Subareas VI, VII and VIII

FISHERIES: In Subareas VI, VII, and VIII red seabream is mostly a bycatch in longline, gillnet, and trawl fisheries from Spanish, French, and UK fleets. The majority of landings are taken from Subarea VIII. Recreational fisheries exist, but there is no data on levels of catch.

Information from observers in the Basque country OTB and pair-trawl fleets in Subareas VI, VII, and VIII indicates that there were no discards for this species in the period 2003–2013. Other countries involved in this fishery have also reported zero discards this year.

Catch distribution: Total catch (2013) was 156 t. Mainly a bycatch in otter trawl, longline, and gillnet fisheries, and with only a few small-scale handliners targeting the species. Over the period 1988–2013 landings have come from Spain (67%), France (19%), UK (12%), and Ireland (2%).

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCKS STRUCTURE: The stock structure is uncertain. Blackspot bream in the northeast Atlantic are considered as three units for management advice purposes.

- Subareas VI, VII, and VIII;
- Subarea IX;
- Subarea X.

This management units division are supported by information on genetics and tagging.

REFERENCE POINTS: No precautionary reference points have been established for this stock

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
		2011–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown
Qualitative evaluation	✗	likely to be below $B_{trigger}$ and B_{lim}

Catches are at 1–2% of the historical levels of the 1960s and 1970s, which indicates that the stock is depleted. A TAC regulation has been implemented since 2003. There is no recent indication of recovery of the stock.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of precautionary considerations that there should be no directed fishery and bycatch should be minimized.

ICES recommends the establishment of a recovery plan for the stock.

STECF COMMENTS:

STECF agrees with the ICES assessments of the state of the stock and that for 2015 and 2016, on the basis of precautionary considerations, there should be no directed fishery and bycatch should be minimized. STECF also agrees that a recovery plan for this stock should be established.

STECF notes that catches have declined significantly and this is considered to be demonstrative of the depletion in stock biomass. Three bottom trawl surveys (the French IBTS, Northern Spanish Shelf bottom-trawl, and the Irish IGFS) are appropriate for monitoring but the species is currently rarely caught, which reinforces the perception of a very low stock biomass.

9.11 Red (blackspot) seabream (*Pagellus bogaraveo*) in ICES Subarea IX

FISHERIES: There are directed handline and longline fisheries in Subarea IX. In the last three years catches have been taken by Spain (64%), Morocco (21%), and Portugal (16%). Almost all Spanish catches are taken in waters close to the Gibraltar Strait by an artisanal fleet with a mechanized handline. Moroccan catches take place in the same area, mainly with longlines.

Total catch Spain and Portugal (2013): 0.18 kt, of which 50% is Spanish artisanal (handlines and longlines) and 50% Portuguese artisanal (mainly longlines). Discarding does not occur.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCKS STRUCTURE: The stock structure is uncertain. Blackspot bream in the northeast Atlantic are considered as three units for management advice purposes.

- Subareas VI, VII, and VIII;
- Subarea IX;
- Subarea X.

This management units division are supported by information on genetics and tagging.

REFERENCE POINTS: No reference points have been established for the stock(s) of this species.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})	?	Unknown
Precautionary approach (F_{pa},F_{lim})	?	Unknown
Qualitative evaluation	?	Unknown

	Stock size	
		2009–2013
MSY ($B_{trigger}$)	?	Unknown
Precautionary approach (B_{pa},B_{lim})	?	Unknown

Qualitative evaluation		below possible reference points

Catches have been decreasing over the last five years. The biomass index (VMS cpue) average in the last two years is 42% lower than the average of the three previous years. Both signals may be considered as a substantial reduction in exploitable biomass.

MANAGEMANT PLANS: Since 1999, the Spanish "voracera" fishery of P. bogaraveo in the Strait of Gibraltar area (ICES Division IXa) has been covered by a local fishing plan from the Spanish National Government and the Regional Government of Andalucía. ICES has not evaluated the plan.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the data-limited approach that annual catches should be no more than 115 t (EU catches). All catches are assumed to be landed.

Additionally, ICES recommends the establishment of a recovery plan for red seabream. This plan should include all fisheries that takes this stock.

Additional considerations

ICES approach to data-limited stocks

For data-limited stocks for which a biomass index is available, ICES uses as harvest control rule an index-adjusted status quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the biomass index has decreased by more than 20% between the periods 2009–2011 (41.3 kg per fishing trip) and 2012–2013 (18.1 kg per fishing trip). This implies a decrease in catches of at most 20% in relation to last year's catches. Total catches for 2013 are not known as catches from Morocco were not available to ICES. Catches from Spain and Portugal for 2013 were 180 t. Applying the 20% reduction corresponds to catches of no more than 144 t for Spain and Portugal.

Additionally, taking into account that the stock is considered overexploited, ICES advises that catches should decrease by a further 20% as a precautionary buffer. This results in catches for Spain and Portugal of no more than 115 t in 2015. All catches are assumed to be landed.

STECF COMMENTS:

STECF agrees with the ICES assessments of the state of the stock and that for 2015 and 2016, on the basis of precautionary considerations, there should be no directed fishery and bycatch should be minimized. STECF also agrees that a recovery plan for this stock should be established and that such a plan should include all fisheries that exploit this stock unit including fisheries conducted by non-EU states (primarily Morocco). If such a recovery plan cannot effectively control total catches, additional measures will be required which may include closing the fishery.

9.12 Red (blackspot) seabream (*Pagellus bogaraveo*) in ICES Subarea X (Azores)

FISHERIES: Red seabream has been caught in hook-and-line fisheries off the Azores since the 16th century. There are now targeted artisanal handline and longline fisheries in Subdivision Xa2. Historically, improvements in fishing technology have taken place in the targeted handline and longline fisheries. These include the introduction of bottom longlines and bigger fishing vessels. Catch distribution: Total catch (2013) = 692 t. 100% from handline and longline. Discards are negligible.

SOURCE OF MANAGEMENT ADVICE: The main management advisory body is ICES.

STOCKS STRUCTURE: : The stock structure is uncertain. Blackspot bream in the northeast Atlantic are considered as three units for management advice purposes.

- Subareas VI, VII, and VIII;
- Subarea IX;
- Subarea X.

This management units division are supported by information on genetics and tagging.

REFERENCE POINTS: No reference points have been established for the stock(s) of this species.

STOCK STATUS:

	Fishing pressure	
		2011–2013
MSY (F_{MSY})		Unknown
Precautionary approach (F_{pa},F_{lim})		Unknown
Qualitative evaluation		Unknown

	Stock size	
		2009–2013
MSY ($B_{trigger}$)		Unknown
Precautionary approach (B_{pa},B_{lim})		Unknown
Qualitative evaluation		Decreasing

The survey index has been variable with a small decline in the last two years. Landings have decreased since 2005.

RECENT MANAGEMENT ADVICE:

Advice for 2015 and 2016

ICES advises on the basis of the data-limited stocks that annual catches should be no more than 400 t tonnes in 2015 and 2016.

Additional considerations

ICES approach to data-limited stocks

For data-limited stocks for which an abundance index is available, ICES uses as harvest control rule an index-adjusted status quo catch. The advice is based on a comparison of the two most recent index values with the three preceding values, combined with recent catch or landings data. Knowledge about the exploitation status also influences the advised catch.

For this stock the abundance is estimated to have decreased by 17% in the period 2009–2011 (average of the three years) and 2012–2013 (average of the two last years). The PA buffer was applied for the advice given in 2012 leading to an advice of 400 t. A considerably higher TAC was given for 2013–2014 and landings have not declined. Given the decline of the survey index ICES considers that the advice from 2012 (400 t) is still valid for 2015–2016

STECF COMMENTS: STECF agrees with the ICES assessments of the state of the stock and that on the basis of the ICES approach for data-limited stocks, annual catches should be no more than 400 t in 2015 and 2016.

10 CONTACT DETAILS OF STECF MEMBERS AND EWG-14-08 LIST OF PARTICIPANTS

1 - Information on STECF members and invited experts' affiliations is displayed for information only. In some instances the details given below for STECF members may differ from that provided in Commission COMMISSION DECISION of 27 October 2010 on the appointment of members of the STECF (2010/C 292/04) as some members' employment details may have changed or have been subject to organisational changes in their main place of employment. In any case, as outlined in Article 13 of the Commission Decision (2005/629/EU and 2010/74/EU) on STECF, Members of the STECF, invited experts, and JRC experts shall act independently of Member States or stakeholders. In the context of the STECF work, the committee members and other experts do not represent the institutions/bodies they are affiliated to in their daily jobs. STECF members and invited experts make declarations of commitment (yearly for STECF members) to act independently in the public interest of the European Union. STECF members and experts also declare at each meeting of the STECF and of its Expert Working Groups any specific interest which might be considered prejudicial to their independence in relation to specific items on the agenda. These declarations are displayed on the public meeting's website if experts explicitly authorized the JRC to do so in accordance with EU legislation on the protection of personnel data. For more information: http://stecf.jrc.ec.europa.eu/adm-declarations

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11 LIST OF BACKGROUND DOCUMENTS

Background documents are published on the meeting's web site on:
https://stecf.jrc.ec.europa.eu/ewg1408

List of background documents:

1. EWG-14-08 – Doc 1 - Declarations of invited and JRC experts (see also section 10 of this report – List of participants)

European Commission

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Abstract

STECF EWG-14-08 was held on 30 June - 4 July 2014 in Copenhagen (Denmark). The meeting produced the 2nd report in 2014 focussing on the review of stocks of EU interest. STECF adopted the report during its plenary meeting on 7-11 July 2014.

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The Scientific, Technical and Economic Committee for Fisheries (STECF) has been established by the European Commission. The STECF is being consulted at regular intervals on matters pertaining to the conservation and management of living aquatic resources, including biological, economic, environmental, social and technical considerations.

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